WATER SUPPLY OUTLOOK FOR MONTANA

Prepared by

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

AS OF
MAY 1, 1973

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 511 N. W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	204 E. 5th. Ave., Room 217, Anchorage, Alaska 99501
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia

COVER PHOTO NUMBER ORC-286-4

USDA SCS-PORTLAND, OREG 1973

WATER SUPPLY OUTLOOK FOR MONTANA

and

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

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MONTANA WATER SUPPLY OUTLOOK
May 1, 1973

* The mountain snowpack continues much below average in western Montana. Extremely heavy snowfall was noted during April in mountainous areas in the southern portion of the state near Bozeman, Red Lodge, Snowy Mountains and the northern portion of the Big Horn Mountains. Melting of the snowpack during April was generally less than average. The remaining lower elevation snowpack in many areas of southern Montana is well above average for this date.

* Streamflow forecasts were increased in the headwaters area of the Madison, Gallatin and Yellowstone River drainages. In other areas, forecasts remain about the same or slightly lower than those released a month ago.

COLUMBIA RIVER DRAINAGE

Snow - Mountain snowfall continued below normal during April. Some melting was noted at higher elevations, but little increase in runoff was evident as nearly all melt water was absorbed by the soils. Some snow courses where measurements began after 1941 have the lowest water equivalent of their record. However, none of the current measurements is as low as those recorded in 1941.

Snow water equivalents in many drainages are between 60 to 75 percent average. The lowest snowpack is in the lower Kootenai, lower Clark Fork and Blackfoot areas with slightly improved conditions in the upper Clark Fork.

Streamflow - Percentagewise, most May-September forecasts are about the same or slightly less than those issued for the April-September period last month. Generally, the outlook for water supplies is less encouraging than it was a month ago. May-September runoff is forecast to be between 60 and 80 percent average for all west side streams. There will be a noticeable lack of late season streamflow because of the shortage of higher elevation snowpack. Peak flows are expected to be below average unless precipitation is extremely heavy during the main snowmelt period.

MISSOURI RIVER DRAINAGE

Snow - The snow accumulation was highly variable during April. Increases in water equivalents from six to 13 inches were observed in the Bridger, Tobacco Root and Snowy Mountains, and northern portion of the Gallatin Range during April. Other areas received generally one to three inches water increase. Melting has begun at some lower elevation snow courses.

The snowpack is now near or above average on the Ruby, Madison and Gallatin drainages, in the Snowy Mountains and along the Continental Divide from Pipestone Pass to McDonald Pass. Snowpack in the Sun-Marias-Teton-Dearborn areas remains extremely low. In some basins the lower elevation snow cover is well above average, while higher elevation snow cover is near or below average.

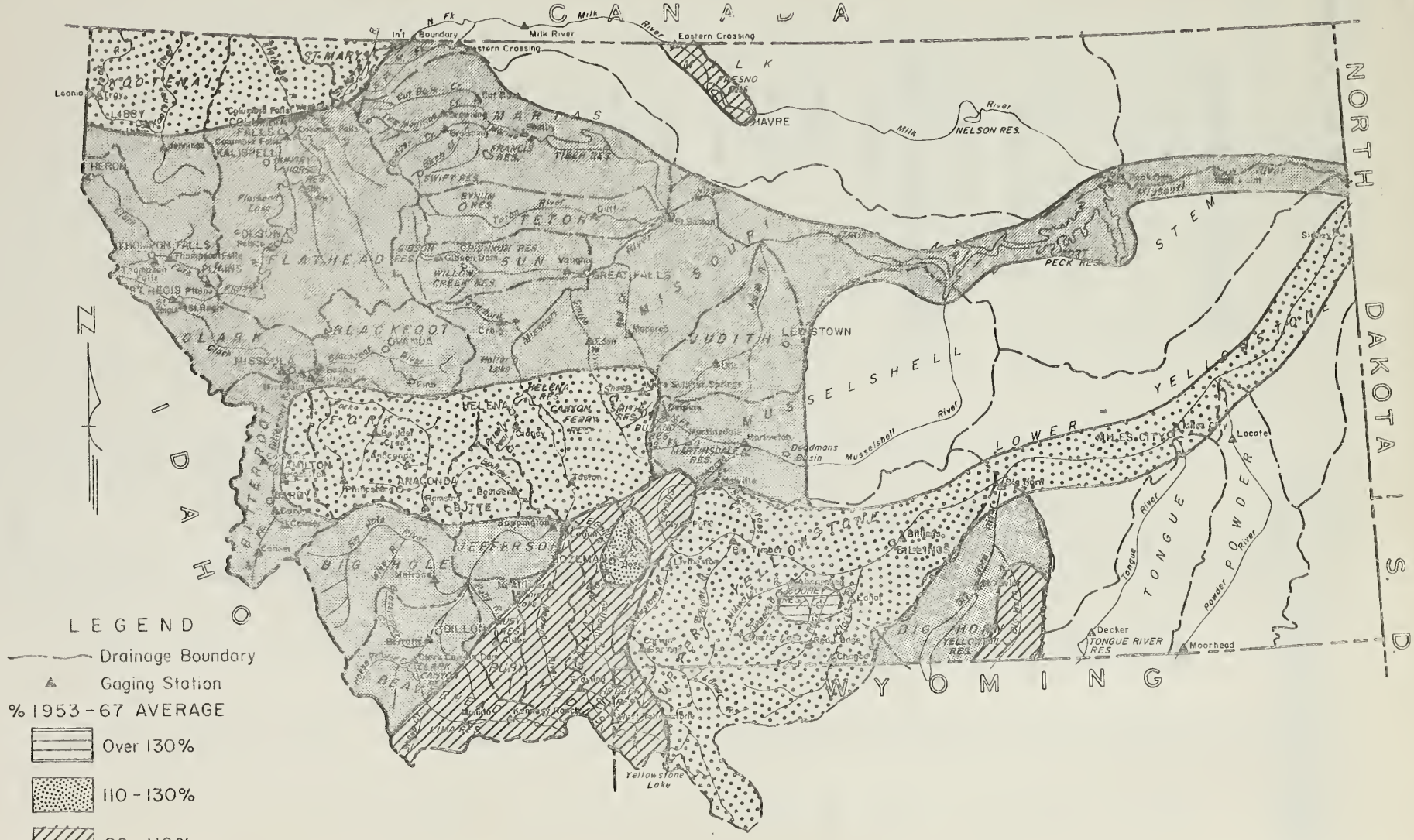
Streamflow - Near average runoff is expected during May-September in the upper Red Rock, Ruby, Madison and Gallatin River drainages. Runoff on the Big Hole, Jefferson and all streams flowing into the Missouri River below Canyon Ferry Reservoir is forecast much below average. Late season irrigation supplies from natural streamflow are expected to be well below average in the Big Hole, Sun, Marias, Teton and Dearborn River drainages.

A potential for high flows exists in areas having a heavy low and median elevation snowpack. Included are streams originating in the Tobacco Root, Snow and Bridger Mountains, and northern portion of the Gallatin Range. Peak flows in other areas and on major rivers are expected to be below average unless rainfall during the main snowmelt period is extremely heavy.

YELLOWSTONE RIVER DRAINAGE

Snow - In the Yellowstone River drainage many snow courses showed increases in water contents during April. April increases between six and 11 inches water content were measured at snow courses in the northern part of Big Horn Mountains, and along the northeastern face of the Beartooth Range from Red Lodge to Boulder-Stillwater divide, along the northern end of the Gallatin Range, and in the Bridger and Crazy Mountains. Snowpack on the Yellowstone River drainage is slightly below average in the upper Yellowstone and Boulder headwaters, and above average in the little Big Horn River headwaters.

Streamflow - May through September runoff is expected to be 80 to 90 percent average for nearly all streams in the Yellowstone drainage above the Big Horn River. Streamflow on the Big Horn headwaters is forecast below average, while the little Big Horn should yield a little above average. Low and median elevation snowpack is above average in some areas and presents a potential for high flows should moderate or heavy rainfall occur during the main snowmelt period. Areas included are the little Big Horn drainages, streams draining the northeastern face of the Beartooth Mountains and Crazy Mountains, and streams in the Shields River drainage. Peak flows in larger streams are expected to be near or below average unless rainfall is heavy during the main snowmelt period.



PROSPECTIVE MAY-SEPTEMBER STREAMFLOW
as of
May 1 1973

MONTANA

50 0 50 100
SCALE IN MILES

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

M7-0-21138-L

SUMMARY of SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF:	
		Last Year	Average
COLUMBIA RIVER DRAINAGE			
Kootenai	19	43	67
Flathead	27	47	74
Upper Clark Fork	21	43	69
Lower Clark Fork	11	34	54
Bitterroot	10	42	70
MISSOURI RIVER DRAINAGE			
Jefferson	29	59	87
Madison	14	82	103
Gallatin	12	97	106
Missouri Main Stem	11	61	85
Judith-Musselshell	8	80	94
Marias-Teton-Sun	11	40	58
St. Mary	6	58	84
Milk (Headwaters)	8	54	78
YELLOWSTONE RIVER DRAINAGE			
Yellowstone	25	79	101
Little Big Horn	7	116	124

SOIL MOISTURE

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average +
COLUMBIA RIVER BASIN							
Kootenai							
Baree Trail	3800	48	7.5	5/01	6.8	6.6	6.6
Murphy Lake R. S.	3000	48	22.6	4/30	20.2	22.4	22.0
Raven	3050	48	23.0	5/01	14.2	15.0	20.2
Flathead							
Desert Mountain	5600	54	8.4	5/03	8.7	8.8	8.7
Marias Pass	5250	54	6.5	4/26	7.0	7.7	6.2
Clark Fork							
Black Pine	7100	48	10.0	5/02	8.6	7.6	7.5
Lubrecht Forest	4100	48	26.8	4/30	24.3	23.9	-
Seeley Lake R. S.	4030	48	11.9	5/01	10.2	11.9	11.9
Skalkaho Summit	7260	48	10.8			9.8	9.9
Bitterroot							
Gibbons Pass	7100	48	7.1	4/30	3.2	4.3	5.8
Lolo Pass	5250	48	10.6	4/27	8.1	6.0	7.0
MISSOURI RIVER BASIN							
Beaverhead							
Lakeview	6700	48	15.3	4/30	14.1	16.4	13.5
Madison							
West Yellowstone	6700	48	6.5			3.3	3.2
Gallatin							
Bridger Bowl	7250	48	17.0	5/02	15.8	15.6	15.7
College Site No. 2	4856	54	17.7	4/27	19.8	16.8	15.8
Lick Creek	6860	48	18.8	4/30	15.4	-	18.0
Twenty-One Mile	7150	48	10.0				4.4
Missouri Main Stem							
Kings Hill	7420	48	11.8	5/03	8.3	4.8	6.8
Stemple Pass	6350	48	5.9	4/27	4.4	5.5	5.1
Milk							
Beaver Creek	3950	48	20.9	4/29	17.8	15.5	-
Rocky Boy	4700	36	10.1	4/26	9.4	9.5	-
Yellowstone							
Battle Ridge	6020	48	17.6	5/02	13.7	13.2	15.0
Northeast Entrance	7350	48	9.4	5/01	7.7	9.2	7.7

+ Averoge for period of record.

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA RIVER BASIN					
Kootenai	Koocanusa	4,965.0	389.0	200.6	-
Flathead	Hungry Horse	3,428.0	2,054.0	1,255.0	1,974.0
	Flathead Lake	1,791.0	674.1	976.2	933.7
	Camas (4)	45.2	33.7	44.0	35.1
	Mission Valley (8)	100.3	35.7	34.6	42.0
Clark Fork	Georgetown Lake	31.0	23.4	25.0	21.7
	Noxon Rapids	334.6	57.9	181.4	144.9
	Nevada Creek	12.6		9.2	8.6
Bitterroot	Como	34.9		11.1	17.3
	Painted Rocks	31.7	0.0	5.5	27.3
MISSOURI RIVER BASIN					
Beaverhead	Clark Canyon	328.9	173.6	155.0	139.1
	Lima	84.0	68.4	61.3	42.7
Ruby	Ruby	38.8		34.2	35.1
Madison	Hebgen Lake	377.5	257.1	182.3	195.9
	Ennis Lake	41.0	32.7	36.3	35.3
Gallatin	Middle Creek	8.0	4.6	4.9	4.6
Missouri	Canyon Ferry	2,043.0	1,565.0	1,533.0	1 572.0
	Hauser & Helena	61.9	52.5	61.3	57.3
	Lake Helena	10.4	7.2	10.2	8.8
	Holter Lake	81.9	79.0	67.1	63.6
	Smith River	10.7	5.9	7.1	8.7
	Bair	7.0	5.1	5.6	5.8
	Martinsdale	23.1	11.3	9.0	10.1
	Deadman's Basin	72.2	69.2	58.6	51.9
	Fort Peck	19,410.0	16,140.0	16,550.0	11,190.0
Sun	Gibson	105.0	50.6	34.8	58.0
	Willow Creek	32.3	25.8	25.7	24.3
	Pishkun	32.0	30.4	28.6	21.3
Marias	Lower Two Medicine	16.6		12.0	1.9
	Four Horns	19.2		12.7	12.5
	Swift	30.0	20.9	13.8	24.2
	Lake Frances	112.0	96.6	88.0	86.8
	Tiber	1,347.0	497.6	557.6	654.6
Milk	Fresno	127.2	89.9	123.5	107.3
	Nelson	66.8	47.9	49.4	45.6
	Lake Sherburne	66.1	16.5	36.8	19.4
Yellowstone	Mystic Lake	20.8	1.7	2.2	3.3
	Tongue River	68.0		41.3	27.4
	Cooney	27.5	23.0	17.0	15.9
Bighorn	Bighorn Lake	1,356.0	940.9	791.8	732.4

Average based on 1953-67 period.

PEAK FLOWS (MAXIMUM MEAN DAILY) (Av. flow for 24 hrs. on day of greatest flow)

FORECAST POINT	PEAK FLOW (SECOND FEET)	
	Forecast Range	Average
COLUMBIA RIVER DRAINAGE		
Blackfoot River near Bonner	5,500- 7,000	10,388
Clark Fork River above Missoula	10,000-12,000	17,024
Bitterroot River near Darby	3,500- 4,500	6,560
Clark Fork River below Missoula	17,000-22,000	30,220
Clark Fork River at St. Regis	24,000-27,000	40,133
N. Fk. Flathead near Columbia Falls	14,000-16,000	24,540
M. Fk. Flathead near Columbia Falls	11,000-13,000	26,226
MISSOURI RIVER DRAINAGE		
Big Hole River near Melrose	5,000- 6,000	7,633
Jefferson River at Silver Star	4,500- 6,000	8,222
Madison River near West Yellowstone	1,200- 1,400	1,335
Gallatin River near Gateway	4,500- 5,500	4,910
Gallatin River near Logan	4 500- 5,500	4,710
Missouri River at Toston	12,000-14,000	16,418
Belt Creek near Monarch	800- 1,200	2,114
Marias River near Shelby	3,000- 4,000	13,801
S. Fk. Musselshell at Martinsdale	350- 450	728
YELLOWSTONE RIVER DRAINAGE		
Yellowstone River at Livingston	17,000-19,000	19,153
Boulder River near Big Timber	3,800- 4,400	5,032
Stillwater River near Absaroka	5,500- 6,500	6,562
Clarks Fork River near Belfry	6,000- 7,000	7,313
Rock Creek near Red Lodge	900- 1,100	1,122
Yellowstone River at Billings	35,000-40,000	41,126

*Highly abnormal weather during the critical melting period may cause the peak to be outside the indicated range.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1968 M-4240

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	FORECAST PERIOD	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
COLUMBIA RIVER BASIN					
FISHER RIVER					
Libby (near)	112	52	May-Sept	296	214
	100	50	May-July	274	199
KOOTENAI RIVER					
Libby (at)	6200	83	May-Sept	7984	7444
	5300	83	May-July	9357	6375
YAAK RIVER					
Troy (near)	337	74	May-Sept	555	458
	320	74	May-July	530	434
KOOTENAI RIVER					
Leonia (at)	6850	82	May-Sept	10299	8397
	5900	81	May-July	8961	7271
	4500	79	May-June	7056	5662
RACETRACK CREEK					
Anaconda (near)	25.5	78	May-Sept		32.1
	20.0	77	May-July		26.0
FLINT CREEK					
Boulder Creek (below)(3)	49.5	79	May-Sept	79.7	62.4
	38.0	79	May-July	62.5	47.9
MIDDLE FORK ROCK CREEK					
Philipsburg (near)	50.5	72	May-Sept		69.7
	45.0	72	May-July		62.4
NEVADA CREEK					
Finn (near)	11.5	68	May-Sept		17.0
	10.5	67	May-July		15.6
BLACKFOOT RIVER					
Bonner (near)	570	64	May-Sept	1280	896
	500	62	May-July	1161	801
	420	62	May-June	1006	676
CLARK FORK RIVER					
Milltown (above)(4)	515	79	May-Sept	878	651
	430	77	May-July	767	555
	350	76	May-June	659	458
CLARK FORK RIVER					
Missoula (above)	1085	70	May-Sept	2158	1547
	930	69	May-July	1929	1356
	770	68	May-June	1666	1134

(3) Sum Flint Creek at Maxville and Boulder Creek at Maxville.
(4) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1969 M-4240

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR			PAST RECORD	
	FORECAST		FORECAST PERIOD	THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average		Last Year	Average
WEST FORK BITTERROOT RIVER					
Conner (near)(5)	92.0	61	May-Sept		154
	83.0	59	May-July		140
BITTERROOT RIVER					
Darby (near)	305	61	May-Sept	669	503
	280	61	May-July	626	462
	240	60	May-June	549	399
SKALKAHO CREEK					
Hamilton (near)	38.0	72	May-Sept		52.9
	32.0	72	May-July		46.0
BURNT FORK CREEK					
Stevensville (near)(10)	23.1	72	May-Sept		32.2
	20.0	72	May-July		27.7
BITTERROOT RIVER					
Missoula (at)(6)	710	54	May-Sept		1319
	650	54	May-July		1212
	550	54	May-June		1028
CLARK FORK RIVER					
Missoula (below)	1795	63	May-Sept		2866
	1580	62	May-July		2569
	1320	61	May-June		2162
ST. REGIS RIVER					
St. Regis (near)	150	58	May-Sept		258
	135	56	May-July		242
CLARK FORK RIVER					
St. Regis (at)	2300	60	May-Sept	5735	3855
	2080	60	May-July	5244	3449
	1750	60	May-June	4505	2908
NORTH FORK FLATHEAD RIVER					
Columbia Falls (near)	1370	74	May-Sept	2383	1857
	1230	73	May-July	2138	1680
	1020	73	May-June	1778	1396
MIDDLE FORK FLATHEAD RIVER					
West Glacier (near)	1200	68	May-Sept	2181	1764
	1100	68	May-July	1991	1624
	920	68	May-June	1658	1355
SOUTH FORK FLATHEAD RIVER					
Columbia Falls (near)(7)	1410	67	May-Sept	2616	2109
	1300	65	May-July	2454	1986
	1120	65	May-June	2104	1718

(5) Adjusted for storage in Painted Rocks Reservoir.
(6) Difference in observed flow Clark Fork above and below Missoula.
(7) Adjusted for storage in Hungry Horse Reservoir.
(10) Adjusted for diversion into Sunset Highline Canal.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1999 M-4240

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	FORECAST PERIOD	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
FLATHEAD RIVER					
Columbia Falls (at)(7)	4050	69	May-Sept	7235	5867
	3750	69	May-July	6640	5403
	3150	69	May-June	5578	4556
SWAN RIVER					
Big Fork (near)	400	67	May-Sept		597
	350	68	May-July		516
	271	67	May-June		405
FLATHEAD RIVER					
Polson (near)(8)	4550	66	May-Sept	8395	6930
	4250	67	May-July	7708	6384
	3550	66	May-June	6388	5351
CLARK FORK RIVER					
Plains (near)(8)	7300	66	May-Sept	14526	11127
	6500	64	May-July	13192	10093
	5400	64	May-June	11050	8447
THOMPSON RIVER					
Thompson Falls (near)	135	57	May-Sept		235
	115	56	May-July		205
PROSPECT CREEK					
Thompson Falls (at)	73	62	May-Sept		118
	65	60	May-July		109
CLARK FORK RIVER					
Whitehorse Rapids (at)(9)	8100	66	May-Sept		12313
	7100	64	May-July		11112
	5900	64	May-June		9278

(7) Adjusted for storage in Hungry Horse Reservoir.
(8) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
(9) Adjusted for storage in Hungry Horse, Flathead Lake and Noxon Rapids Reservoirs.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG 1969 M-4240

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	FORECAST PERIOD	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
MISSOURI RIVER BASIN					
BEAVERHEAD RIVER					
Grant (near)(11)(12)	50.0	70	May-Sept	229	71.5
	40.0	72	May-July	131	55.5
RUBY RIVER					
Alder (near)	75.0	105	May-Sept	106	71.6
	62.0	106	May-July	88.6	58.6
BIG HOLE RIVER					
Melrose (near)	390	64	May-Sept		611
	350	62	May-July		563
BIRCH CREEK					
Glen (near)	7.7	62	May-Sept		12.4
	6.2	60	May-July		10.3
JEFFERSON RIVER					
Silver Star (at)(12)	440	59	May-Sept		748
	370	56	May-July		655
BOULDER RIVER					
Boulder (near)	61.0	86	May-Sept		71.0
	58.0	86	May-July		67.6
WILLOW CREEK					
Harrison (near)	16.8	124	May-Sept		13.5
	15.0	122	May-July		12.3
MADISON RIVER					
West Yellowstone (near)	173	94	May-Sept	249	184
	126	95	May-July	179	133
MADISON RIVER					
Grayling (near)(13)	380	101	May-Sept	569	376
	290	102	May-July	430	284
MADISON RIVER					
McAllister (near)(14)	665	103	May-Sept	996	643
	515	104	May-July	759	495
GALLATIN RIVER					
Gateway (near)	437	99	May-Sept	498	440
	370	101	May-July	420	367
BRIDGER CREEK					
Bozeman (near)	25.5	146	May-Sept		17.5
	23.5	145	May-July		16.2

(11) Adjusted for storage in Lima Reservoir.
(12) Adjusted for storage in Clark Canyon Reservoir.
(13) Adjusted for storage in Hebgen Lake.
(14) Adjusted for storage in Hebgen and Ennis Lakes.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1969 M-4240

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	FORECAST PERIOD	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
HYALITE CREEK					
Bozeman (near)(15)	42.0	120	May-Sept		34.9
	36.0	120	May-July		30.0
GALLATIN RIVER					
Logan (at)	440	107	May-Sept		413
	370	108	May-July		341
MISSOURI RIVER					
Toston (at)(16)	1480	82	May-Sept	2435	1810
	1225	80	May-July	2055	1540
SHEEP CREEK					
White Sulphur Springs (near)	12.2	70	May-Sept		17.5
	10.0	67	May-July		15.0
SUN RIVER					
Gibson Dam (at)(17)	320	56	May-Sept	716	574
	280	53	May-July	651	525
BELT CREEK					
Monarch (near)	65.0	63	May-Sept		10.3
	60.0	64	May-July		93.9
MISSOURI RIVER					
Fort Benton (at)(18)	1900	65	May-Sept		2915
	1505	62	May-July		2428
TWO MEDICINE CREEK					
Browning (near)(19)	140	61	May-Sept		229
	130	60	May-July		218
BADGER CREEK					
Browning (near)	77.0	63	May-Sept		122
	63.0	60	May-July		105
CUT BANK CREEK					
Cut Bank (at)	61.0	58	May-Sept	134	105
	55.0	58	May-July	113	95.5
MARIAS RIVER					
Shelby (near)(20)	230	43	May-Sept		532
	220	43	May-July		509

(15) Adjusted for storage in Middle Creek Reservoir.
(16) Adjusted for storage in Hebgen and Ennis Lakes and Clark Canyon Reservoir.
(17) Adjusted for storage in Gibson Reservoir and diversions.
(18) Adjusted for storage in Canyon Ferry Reservoir.
(19) Adjusted for storage in Two Medicine Reservoir and diversions into Two Medicine Canal.
(20) Adjusted for storage in Two Medicine, Four Horns, Lake Frances and Swift Reservoirs.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG 1969 M-4240

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	FORECAST PERIOD	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
MISSOURI RIVER					
Virgelle (at)(21)	2200	62	May-Sept	3839	3554
	1750	58	May-July	2780	3029
SOUTH FORK JUDITH RIVER					
Utica (near)	5.8	50	May-Sept	12.3	11.6
	5.0	46	May-July	10.7	10.8
MISSOURI RIVER					
Landusky (near)(21)	2400	61	May-Sept		3941
	1900	57	May-July		3346
NORTH FORK MUSSELSHELL RIVER					
Delpine (near)	2.6	55	May-Sept		4.7
	2.0	53	May-July		3.8
SOUTH FORK MUSSELSHELL RIVER					
Martinsdale (above)	24.0	57	May-Sept		41.8
	23.0	58	May-July		39.6
MISSOURI RIVER					
Fort Peck Dam (below)(22)	2150	58	May-Sept		3713
	1800	56	May-July		3225
MILK RIVER					
Eastern Crossing (at)	185	92	May-Sept		220
MISSOURI RIVER					
Wolf Point (near)(22)	2300	58	May-Sept		3939
	1900	56	May-July		3423
MISSOURI RIVER					
Williston, N.D. (near)(29)	6800	71	May-Sept		9625
	5900	72	May-July		8227
SASKATCHEWAN RIVER BASIN					
ST. MARY RIVER					
Babb (near)(30)	385	82	May-Sept		472
	330	81	May-July		407

(21) Adjusted for storage in Canyon Ferry and Tiber Reservoirs.
(22) Adjusted for storage in Canyon Ferry, Tiber and Fort Peck Reservoirs.
(29) Adjusted for storage in Canyon Ferry, Tiber, Fort Peck, Buffalo Bill, Boysen and Yellowtail Reservoirs. Sum Yellowstone River near Sidney and Missouri River near Culbertson.
(30) Adjusted for storage in Lake Sherburne.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG 1969 M-4240

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	FORECAST PERIOD	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
YELLOWSTONE RIVER BASIN					
YELLOWSTONE RIVER					
Corwin Springs (at)	1580	88	May-Sept	2259	1804
	1320	88	May-July	1862	1498
YELLOWSTONE RIVER					
Livingston (near)	1800	89	May-Sept		2025
	1480	88	May-July		1672
BOULDER RIVER					
Big Timber (at)	275	82	May-Sept		337
	260	82	May-July		316
STILLWATER RIVER					
Absarokee (near)(25)	470	87	May-Sept		538
	400	88	May-July		455
CLARKS FORK RIVER					
Belfry (near)	465	83	May-Sept		561
	425	83	May-July		510
ROCK CREEK					
Red Lodge (near)	83.0	80	May-Sept	126	104
	64.0	80	May-July	90.4	79.9
YELLOWSTONE RIVER					
Billings (at)	3180	85	May-Sept	4300	3726
	2730	86	May-July	3419	3182
BIG HORN RIVER					
St. Xavier (near)(26)	1000	63	May-Sept	2032	1599
	950	63	May-July	1740	1503
LITTLE BIG HORN RIVER					
Lodgegrass (near)(28)	120	108	May-Sept		111
	105	108	May-July		97.4
YELLOWSTONE RIVER					
Miles City (at)(27)	4300	79	May-Sept		5436
	3800	80	May-July		4761
YELLOWSTONE RIVER					
Sidney (near)(27)	4350	78	May-Sept		5572
	3900	79	May-July		4958

(25) Adjusted for storage in Mystic Lake.
(26) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake and Yellowtail Reservoirs.
(27) Adjusted for storage in Buffalo Bill, Boysen and Yellowtail Reservoirs.
(28) Sum Little Big Horn below Pass Creek and Lodgegrass Creek near Wyola.

Average based on 1953-67 period.

USDA-SCS-PORTLAND, OREG. 1969 M-4240

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches) Last Year	Water Content (inches) Average
COLUMBIA RIVER BASIN						
KOOTENAI RIVER						
Bald Eagle Peak	5700	5/04	100	47.7	94.4	-
Banfield Mountain	5600	5/03	30	14.4	35.4	-
Banfield Mountain Pillow	5600	5/03	SP	13.9	31.8	-
Baree Creek	5500	5/01	62	26.6	69.3	48.4
Baree Midway	4600	5/01	43	18.0	49.7	35.8
Baree Trail	3800	5/01	0	0.0	1.8	1.0
Bear Mountain	5400	5/02	87	43.3	96.1	-
Bristow Creek	3900	5/03	0	0.0	0.0	-
Brush Creek	5000	5/01	15	5.0	13.7	10.7
Brush Creek Timber	5000	5/01	10	3.0	12.2	9.4
Cedar Grove	4100	5/04	0	0.0	9.8	-
Davis Creek	5400	5/01	36	16.9	32.5	-
Fernie	3500	4/30	0	0.0	7.6	3.0
Field	4200	5/03	1	0.2	7.0	1.0
Garver Creek	4250	5/01	0	0.0	3.2	-
Garver Creek Pillow	4250					
Glacier	4100	4/27	55	25.1	49.1	28.3
Graves Creek	4300	4/30	18	7.6	25.9	16.8
Gray Creek	5100	4/29	52	17.7	27.6	21.0
Halverson Creek	4850	5/02	58	28.8	64.8	-
Hawkins Lake	6450	5/01	70	29.8	49.5	-
Hawkins Lake Pillow	6450	5/01	SP	27.1	46.8	-
Keeler Creek	3300	5/02	0	0.0	0.0	-
Kicking Horse	5400	5/03	34	11.6	20.7	14.5
Kimberley	3800	4/30	0	0.0	0.0	8.5
Lost Soul	4800	5/03	5	2.4	10.1	-
Marble Canyon	5000	4/30	35	12.6	24.1	12.8
Morrissey Ridge	6100				49.0	28.8
New Fernie	4100	4/30	10	3.0	21.3	7.3
Poorman Creek	5100	5/04	35	16.0	50.0	-
Poorman Creek Pillow	5100	5/04	SP	16.6	49.5	-
Red Mountain	6000	5/01	38	14.1	30.0	21.0
Sinclair Pass	4500	4/30	13	4.1	9.7	2.3
Stahl Peak	6050	4/30	90	43.9	59.2	-
Sullivan Mine	5100	4/30	26	10.2	20.4	13.1
Upper Elk River	4400	4/26	0	0.0	1.9	2.2
Weasel Divide	5450	4/30	67	30.4	56.0	36.6

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
FLATHEAD RIVER						
Bassoo Peak	5150	5/01	2	0.7	12.7	8.3
Beaver Lake	5900	5/03	45	16.2	36.8	26.6
Big Creek	6750	5/01	94	41.2	68.4	51.7
Camp Misery	6400	5/02	107	47.9	70.1	50.5
Desert Mountain	5600	5/03	33	11.8	22.8	15.1
Fatty Creek	5500	5/01	49	17.9	34.9	23.2
Griffin Creek Divide	5150	5/01	11	3.4	15.0	8.1
Gunsight Lake	6300	5/03	73	33.4	57.1	44.5
Hell Roaring Divide	5770	4/30	56	25.0	48.0	33.5
Holbrook	4530	5/03	0	0.0	3.6	1.8
Logan Creek	4300	5/01	0	0.0	6.2	3.5
Marias Pass	5250	4/26	26	7.9	31.4	18.7
Mineral Creek	4000	4/29	15	5.4	18.2	15.3
Noisy Creek	3600	5/02	0	0.0	0.0	-
North Fork Jocko	6330	5/02	68	31.2	69.8	49.1
Spotted Bear Mountain	7000	5/03	11	4.4	16.8	12.2
Trinkus Lake	6100	5/03	84	38.4	61.9	47.1
Twin Creeks	3580	5/03	0	0.0	0.0	1.8
Upper Holland Lake	6200	5/03	62	25.0	56.7	39.7
CLARK FORK RIVER						
Black Pine	7100	5/02	27	9.1	26.3	15.3
Black Pine Pillow	7100	5/02	SP	10.4	26.5	16.0
Combination	5600	5/02	0	0.0	8.2	-
Combination Pillow	5600	5/02	SP	0.0	-	-
Copper Bottom	5200	5/03	0	0.0	12.8	-
Copper Camp	6950	5/03	50	20.8	59.7	-
Copper Creek	5700	5/03	8	2.8	23.7	-
Copper Lake Creek	6100	5/03	35	13.8	44.8	-
Coyote Hill	4200	5/01	0	0.0	8.9	2.9
Fred Burr Pass	8000	5/01	66	21.7	43.9	29.6
Heart Lake Trail	4800	5/01	49	16.5	38.7	17.2
Hoodoo Basin	6000	5/01	78	34.8	88.0	55.8
Hoodoo Basin Pillow	6000	5/01	SP	32.1	84.3	54.8
Hoodoo Creek	5900	5/01	75	31.6	85.9	52.0
Intergaard	6450	5/01	22	6.8	14.6	7.8
Lookout	5250	5/01	39	16.8	54.0	36.7
Lubrecht Flume	4680	4/28	0	0.0	0.0	-
Lubrecht Flume Pillow	4680	4/28	SP	0.0	3.0	-

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
CLARK FORK RIVER (Continued)						
Lubrecht Forest No. 3	5450	4/28	1	0.4	9.7	3.1
Lubrecht Forest No. 4	4650	4/28	0	0.0	0.0	0.2
Lubrecht Forest No. 6	4040	4/28	0	0.0	0.0	0.0
Lubrecht Hydroplot	4200	4/28	0	0.0	0.0	-
North Fork Elk Creek	6250	4/30	16	5.3	22.6	-
Peterson Meadows	7200	4/26	35	10.2	19.1	-
Red Lion	7100	5/01	41	10.4	29.6	18.0
Skalkaho Summit	7260	5/01	49	18.2	46.8	27.3
Slide Rock Mountain	7100	5/01	38	12.6	30.2	16.5
Southern Cross	6500	4/30	0	0.0	11.6	-
Storm Lake	7780	4/26	49	15.2	21.9	16.6
Stuart Mill	6500	5/01	10	2.7	8.2	-
Stuart Mountain	7400	4/27	64	26.7	49.3	32.6
TV Mountain	6800	4/26	40	13.4	34.7	20.0
BITTERROOT RIVER						
Ambrose	6480	4/27	36	12.2	25.4	13.2
Gibbons Pass	7100	4/30	51	20.2	36.6	23.1
Lolo Pass	5230	4/30	33	13.5	51.9	32.7
Lost Horse	5940	5/02	54	23.0	51.4	34.0
Moose Creek	6200	4/27	36	11.8	24.0	12.3
Nez Perce Camp	5580	4/27	19	6.6	24.6	11.7
Nez Perce Pass	6570	4/27	29	10.7	28.0	13.9
Saddle Mountain	7940	4/30	62	22.6	41.8	28.0
Saddle Mountain Pillow	7940	4/30	SP	21.8	42.0	-
Savage Pass	6600	4/30	44	17.2	44.1	-
Twelvemile Creek	5600	5/02	10	4.5	36.1	-
Twelvemile Creek Pillow	5600	5/02	SP	7.9	29.3	-
Twin Lakes	6510	5/02	72	30.9	75.8	48.0
Twin Lakes Pillow	6400	5/02	SP	28.7	69.8	-

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches) Last Year	Average
MISSOURI RIVER BASIN						
BEAVERHEAD RIVER						
Bloody Dick	7600	5/03	27	8.8	18.1	11.0
Dad Creek Lake	8400	5/02	56	17.5	20.6	14.2
Elk Horn Springs	7800	5/02	21	6.1	15.1	9.2
Gold Stone	8100	5/03	38	12.6	25.3	16.0
Lakeview Canyon	6930	4/30	32	9.4	11.6	10.7
Lakeview Ridge	7400	4/30	26	8.4	10.4	9.0
Sawtelle Mountain	8715	4/30	90	33.5	43.7	-
White Elephant	7700	4/30	63	24.6	-	-
White Pine Ridge	8850	5/02	27	7.6	7.8	6.5
RUBY RIVER						
Branham Lakes	8850	4/30	86	32.2	39.2	-
Clover Meadow	8600	5/02	64	19.5	23.4	17.6
Divide	7800	5/02	35	10.8	13.8	9.0
Middle Mill Creek	7850	4/30	53	17.2	22.0	-
Notch	8500	5/02	53	15.6	24.3	15.0
Smuggler Mine	6960	4/30	34	10.0	10.5	-
BIG HOLE RIVER						
Abundance Lake	8800	5/02	55	17.4	31.2	22.0
Calvert Creek	6450	5/02	11	3.8	19.2	-
Darkhorse Lake	8600	5/02	62	21.9	43.8	29.2
Foolhen	8280	5/02	38	12.4	30.0	19.1
Jahnke Creek	7340	5/03	25	8.5	-	-
Jahnke Lake Trail	7200	5/03	27	9.0	19.6	-
Mudd Lake	7650	5/02	38	13.6	33.4	-
Palisade Creek	8250	5/02	63	25.0	49.6	31.5
Slag-A-Melt Lake	8750	5/02	52	20.4	39.6	-
JEFFERSON RIVER						
Berry Meadow	7300	4/30	20	6.0	-	8.0
Copper Mountain	7700	4/30	30	7.7	14.6	10.4
Nez Perce Creek	6500	4/30	14	3.5	3.4	-
Picnic Grounds	6500	4/30	0	0.0	0.0	-
Pipestone Pass	7200	4/30	16	5.4	8.3	5.6
Rocker Peak	8000	4/30	45	14.0	23.8	-
Rocker Peak Pillow	8000	4/30	SP	14.5	23.3	-
Uncle Sam Gulch	6500	4/30	16	5.2	12.2	-

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average
MADISON RIVER						
Big Springs	6500	4/30	40	16.6	19.8	17.0
Black Bear	7950	4/27	94	35.3	59.6	-
Black Bear Pillow	7950	4/27	SP	34.2	49.7	-
Black Canyon	7850	4/25	83	34.3	47.6	-
Black Moose	8125	4/25	96	38.2	53.6	-
Call Road	8050	5/02	47	15.1	16.6	11.8
Four Mile	6900	5/04	35	11.6	8.2	6.0
Hebgen Dam	6550	5/01	20	7.0	6.8	5.8
Island Park	6315	4/30	21	8.1	7.0	9.7
Jack Creek	7500				-	-
Latham Springs	7650	4/25	82	34.2	40.4	-
Lower Twin	7900	5/04	69	25.0	29.6	22.5
Lucky Dog	6900	4/25	60	23.6	29.2	-
Madison Plateau	7750	4/27	57	20.9	31.4	-
Madison Plateau Pillow	7750	4/27	SP	21.4	33.0	-
Norris Basin	7500	4/28	24	7.6	8.0	7.6
North Meadow	7500	5/04	43	13.4	13.0	7.8
Potomageton Park	7150	4/30	33	11.2	12.8	10.2
Sentinel Creek	8300	4/30	64	22.3	30.2	25.2
Targhee Pass	7000	4/30	31	9.6	16.9	14.0
Valley View	6500	4/30	25	8.0	12.8	13.0
West Yellowstone	6700	5/01	18	6.9	9.4	6.2
West Yellowstone Pillow	6700	5/01	SP	6.1	6.8	4.9
Whiskey Creek	6800	4/27	41	16.0	24.0	-
Whiskey Creek Pillow	6800	4/27	SP	15.2	22.1	-
GALLATIN RIVER						
Arch Falls	7350	4/30	56	17.0	14.2	14.2
Bear Basin	8150	4/27	73	20.8	24.4	23.2
Bridger Bowl	7250	5/02	84	30.2	33.6	30.1
Bridger Bowl Pillow	7250	5/02	SP	29.8	33.9	29.0
Carrot Basin	9000	4/30	100	40.3	48.0	-
Devils Slide	8100	4/30	85	26.4	26.1	25.7
Hood Meadow	6600	4/30	52	17.5	10.7	9.3
Lick Creek	6860	4/30	56	17.2	5.6	9.0
Lick Creek Pillow	6860	4/30	SP	15.2	6.3	8.3
Little Park	7400	4/27	52	14.8	18.8	17.0
Maynard Creek	6210	5/02	54	20.5	21.1	18.4
Maynard Creek Pillow	6210	5/02	SP	11.6	12.6	12.2
Shower Falls	8100	4/30	91	29.7	30.7	28.6
Shower Falls Pillow	8100	4/30	SP	29.2	29.7	26.7
Twenty-One Mile	7150	5/01	36	9.7	23.4	16.0

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
MISSOURI RIVER (Main Stem)						
Boulder Mountain	7950	4/30	49	16.8	29.8	19.8
Chessman Reservoir	6200	5/02	11	3.1	2.3	3.2
Deadman Creek	6450	5/03	19	6.7	13.8	9.5
Deadman Creek Pillow	6450	5/03	SP	5.6	9.9	-
Elk Peak	8000	5/02	44	13.8	24.4	19.7
Frohner Meadows	6480	4/30	21	6.4	-	-
Frohner Meadows Pillow	6480	4/30	SP	9.5	-	-
Grasshopper	7000	5/02	19	6.4	5.8	6.0
Kings Hill	7500	4/30	46	13.1	23.2	14.7
Stemple Pass	6600	5/02	30	9.2	17.8	10.8
Ten Mile Lower	6600	5/01	25	7.8	6.7	5.3
Ten Mile Middle	6800	5/01	41	12.9	17.3	11.6
Ten Mile Upper	8000	5/01	48	14.2	22.2	16.0
SUN-TETON-MARIAS RIVERS						
Badger Pass	6900	5/03	79	32.8	64.6	42.0
Blue Lake	5900	5/03	47	20.7	44.6	-
Cabin Creek	5200	5/01	0	0.0	0.0	2.2
Five Bull	5700	5/03	3	1.3	6.0	5.3
Freight Creek	6000	5/03	26	10.6	25.9	16.4
Goat Mountain	7000	5/04	17	4.4	15.2	11.8
Mount Lockhart	6400	4/27	42	15.0	43.0	-
Mount Lockhart Pillow	6400	4/27	SP	14.4	38.8	-
Waldron	5600				12.6	-
Waldron Pillow	5600	4/27	SP	6.8	11.7	-
Wrong Creek	5700	5/01	11	3.6	18.1	13.0
Wrong Ridge	6800	5/02	36	11.9	33.1	22.5
JUDITH RIVER						
Avalanche	7100	4/30	87	28.4	26.2	-
Big Snowy	7150	4/30	79	26.0	24.9	-
Crystal Lake	6100	4/30	66	21.2	9.8	14.0
Rock Creek	5600	4/30	46	15.3	4.7	8.8
Spur Park	8100	5/03	47	16.0	34.2	24.0
Spur Park Pillow	8100	5/03	SP	16.4	34.9	-
MUSSELSHELL RIVER						
Daisy Peak	7600	5/01	43	13.7	17.2	-
Johnson Park	6450	5/01	8	2.1	0.0	-

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR: Date of Survey	THIS YEAR: Snow Depth (Inches)	THIS YEAR: Water Content (Inches)	PAST RECORD: Water Content (inches) Last Year	PAST RECORD: Water Content (inches) Average
MILK RIVER						
Bear Paw Ski Area	5200	4/26	13	3.8	-	-
Boxelder Creek	5100	4/26	17	5.0	-	-
King Creek Saddle	4550	5/03	0	0.0	0.0	-
King Springs	4150	5/03	0	0.0	0.0	-
Kiwanis Camp	3720	4/26	5	1.8	-	-
Mission Mountain	5050	5/03	0	0.0	0.0	-
Rocky Boy	4700	4/26	9	3.6	0.0	-
Rocky Boy Pillow	4700	4/26	SP	2.4	0.4	-
Sucker Creek	3960	4/26	8	2.7	-	-
Taylor Road	4080	4/26	7	2.6	-	-
ST. MARY RIVER						
Hudson Bay Divide	5800	4/30	48	14.3	29.6	21.5
Iceberg Lake No. 3	5600	5/02	71	32.2	52.6	32.9
Josephine Lower No. 9	4900	5/01	36	13.7	30.0	20.1
Mt. Allen No. 7	5700	5/01	98	43.3	68.1	50.3
Peigan Pass No. 6	5500	5/01	86	37.9	62.8	43.6
Ptarmigan No. 8	5800	5/02	81	36.0	63.7	41.8
UPPER YELLOWSTONE RIVER						
Bald Ridge	7500	5/01	44	13.7	12.4	12.5
Bots Sots	8000	5/02	62	20.8	-	-
Camp Senia	7890	5/02	60	17.3	10.3	8.2
Canyon	7750	5/01	42	13.6	18.3	15.3
Cooke Station	8150	4/27	53	16.6	26.7	19.0
East Boulder (S)	9250	4/29	85	28.0A	41.0A	-
East Entrance	7000	5/01	11	1.8	0.0	-
Fisher Creek	9100	4/27	98	35.4	57.8	37.5
Fisher Creek Pillow	9100	4/27	SP	33.2	54.2	-
Grizzly Peak	8400	5/02	129	35.8	28.6	22.0
Independence	7850	4/30	50	16.2	21.6	17.9
Lake Camp	7850	4/29	27	5.2	9.5	7.8
Lupine Creek	7300	4/29	21	6.9	7.9	8.0
Mill Creek	7500	4/30	59	17.7	10.8	-
Monument Peak	8800	4/30	68	22.5	33.0	27.4
Northeast Entrance	7400	4/30	23	6.4	10.3	7.1
Northeast Entrance Pillow	7350	5/01	SP	8.0	8.3	7.0

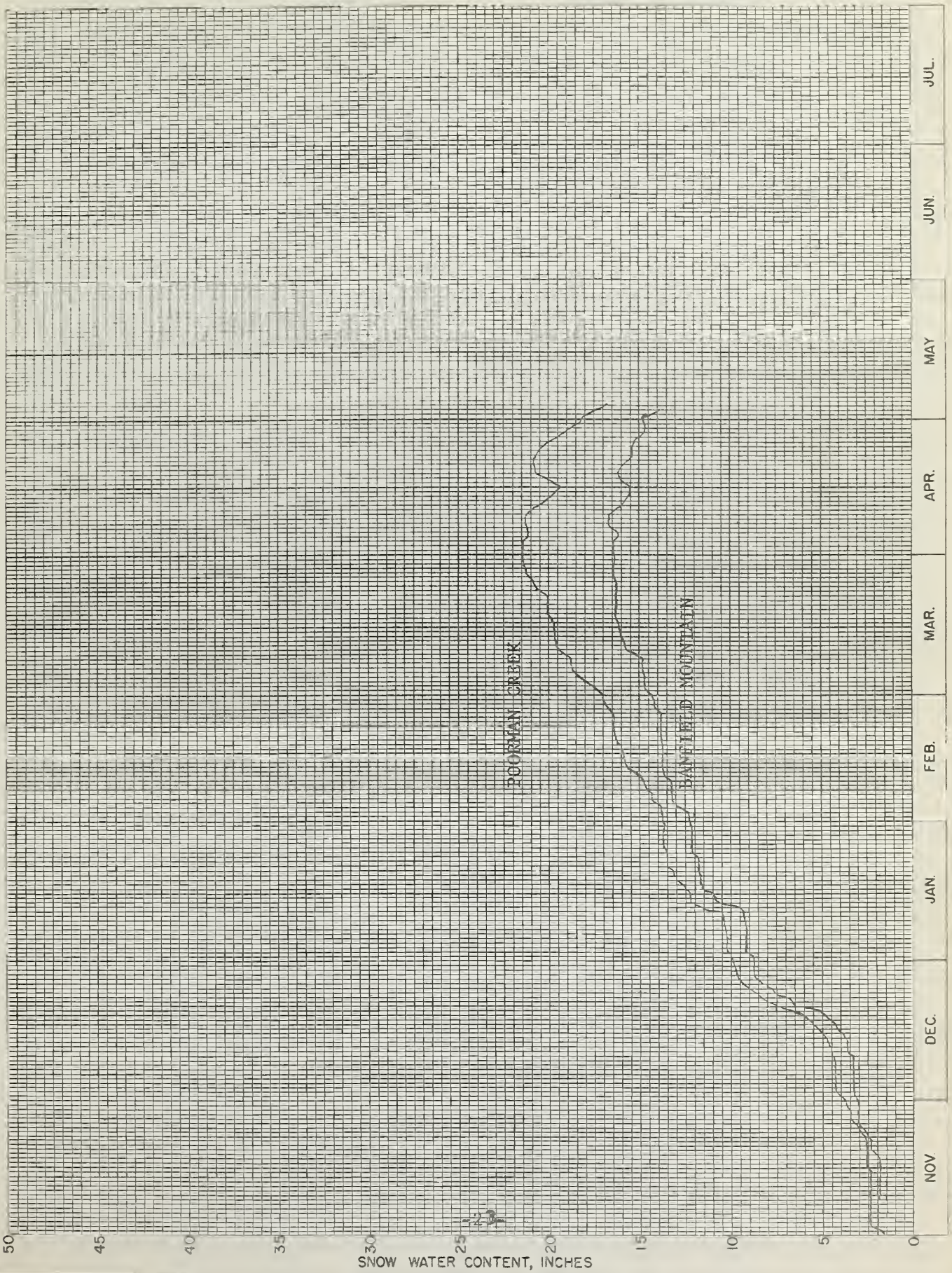
Average based on 1953-67 period. Snow pillow observation - water content only.
A - Aerial observation - water contnet estimated.

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches) Last Year	Water Content (inches) Average
UPPER YELLOWSTONE RIVER (Continued)						
Picket Pin Lower	6200	5/02	21	6.4	-	-
Picket Pin Middle	7250	5/02	53	18.6	-	-
Picket Pin Upper	8100	5/02	93	24.7	30.2	-
Picket Pin (T)	9450	4/29	87	24.5A	22.0A	-
Placer Basin (F)	8800	4/29	89	25.0A	25.0A	-
Porcupine	6500	5/01	31	9.5	7.0	7.7
Sacajawea	6550	5/02	44	15.8	11.6	12.1
South Fork Shields	8100	5/01	74	24.6	30.0	27.2
Star Lake (M)	9670	4/29	89	31.0A	51.0A	-
Sylvan Pass	7100	5/01	34	9.8	11.4	10.9
Timberline Creek	8850	5/02	89	25.2	24.5	18.2
West Rosebud	7500	4/27	60	19.9	-	-
White Mill	8700	4/27	76	25.4	39.4	26.8
Wolverine	7650	4/30	29	7.3	13.4	-

Average based on 1953-67 period. A - Aerial observation - water content estimated.

SNOW PILLOW DATA
WATER YEAR 1973

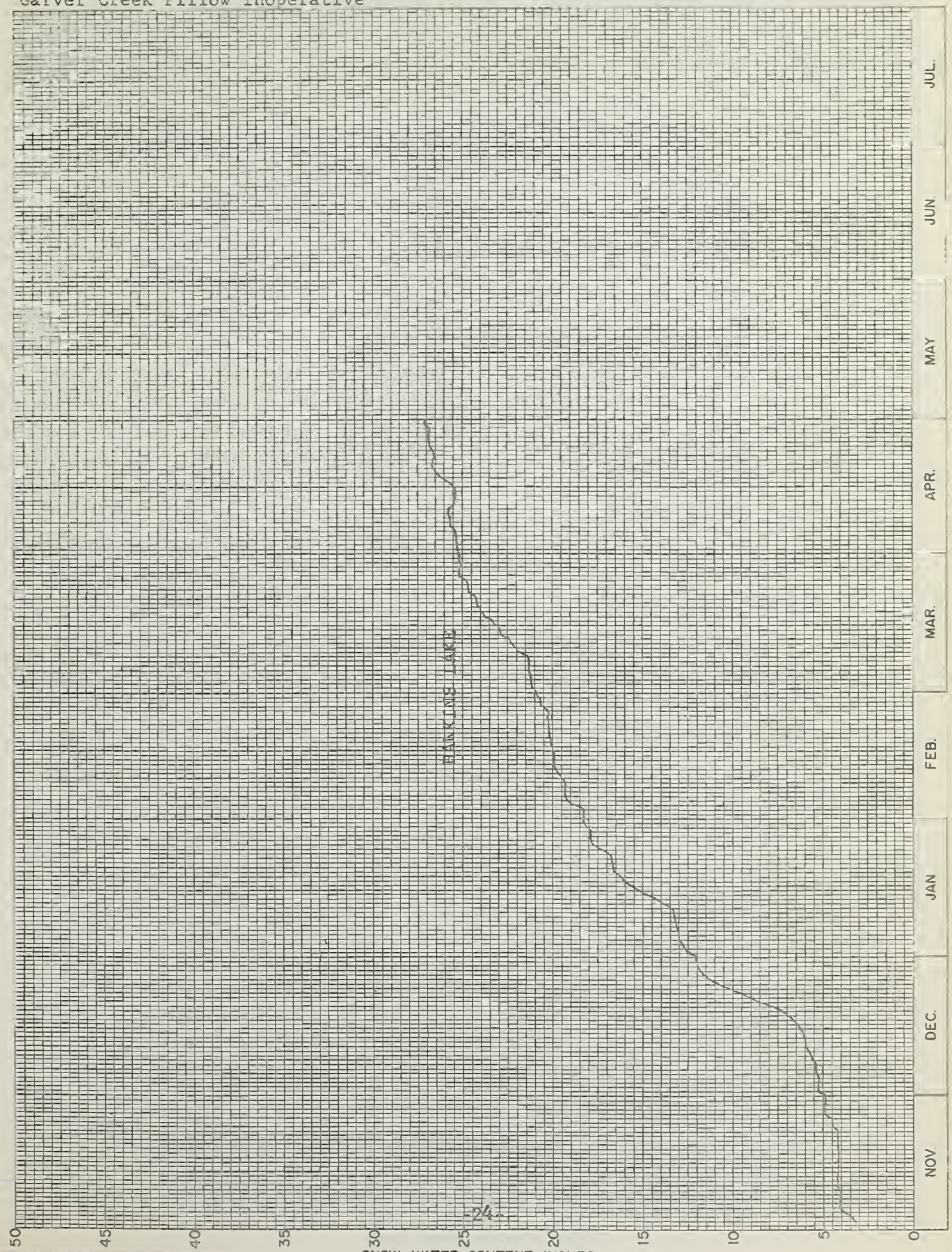
No. _____ Elev. _____ Drainage: KOOTENAI



SNOW PILLOW DATA
WATER YEAR 1973

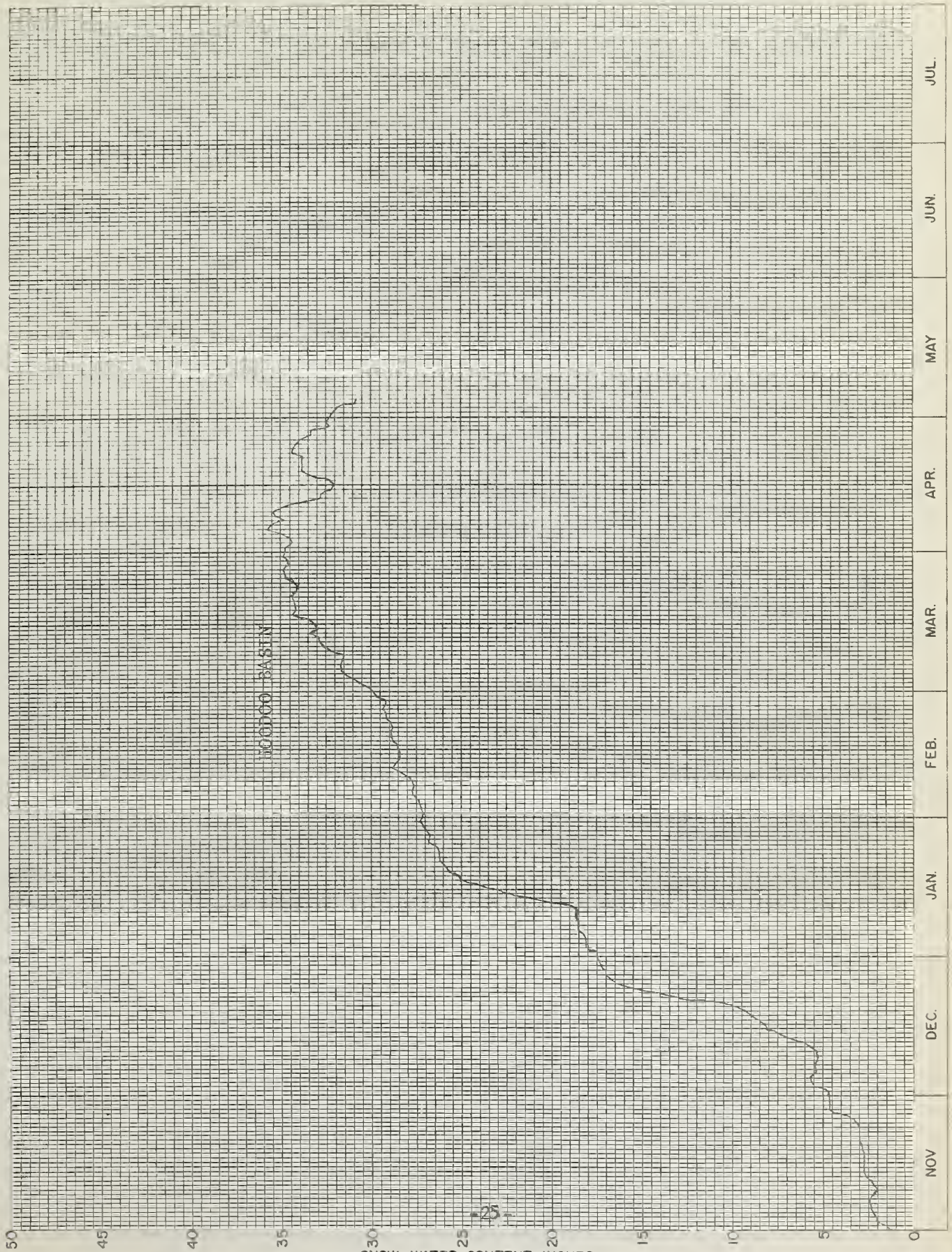
No. _____ Elev. _____ Drainage: KOOTENAI

Carver Creek Pillow inoperative



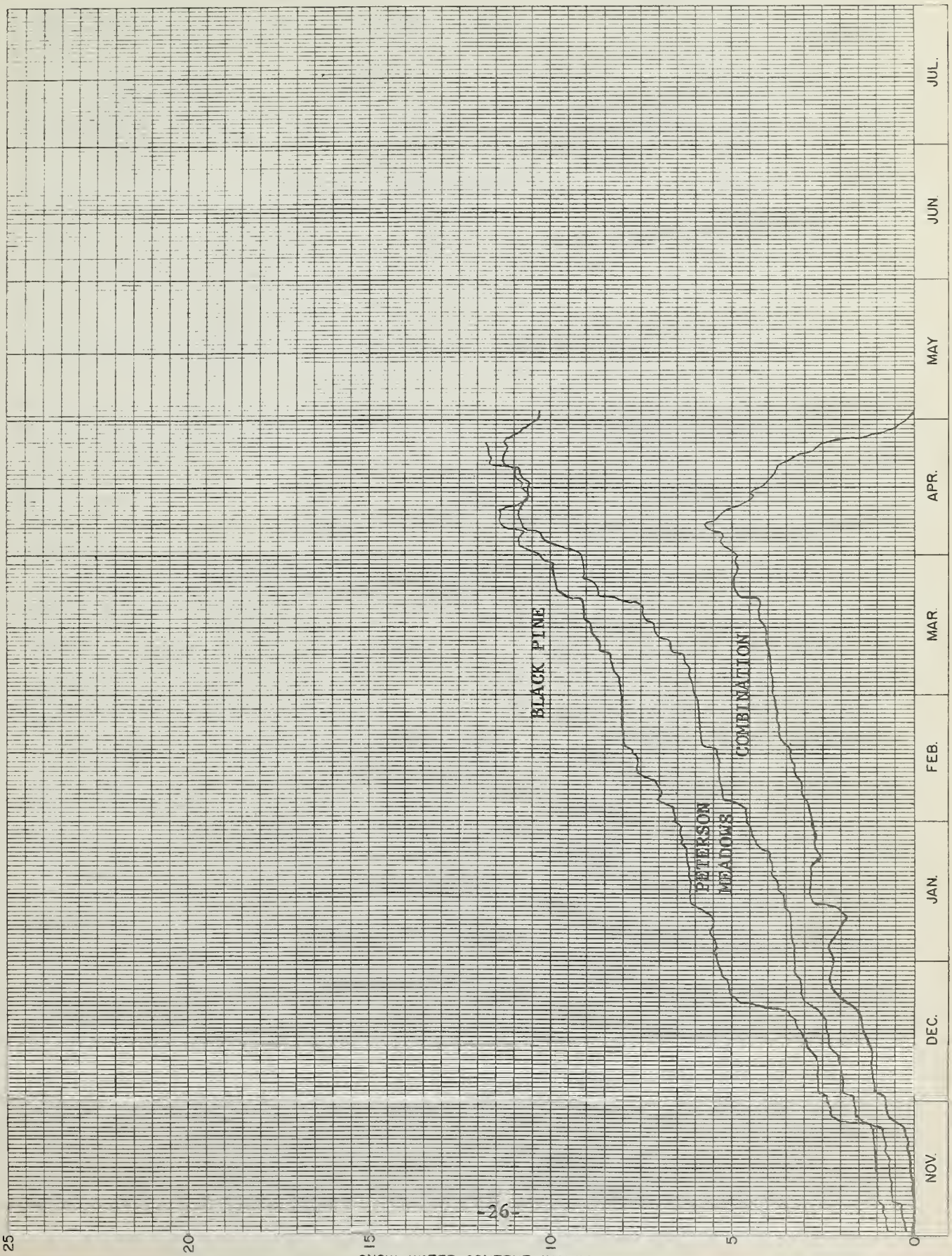
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage CLARK FORK



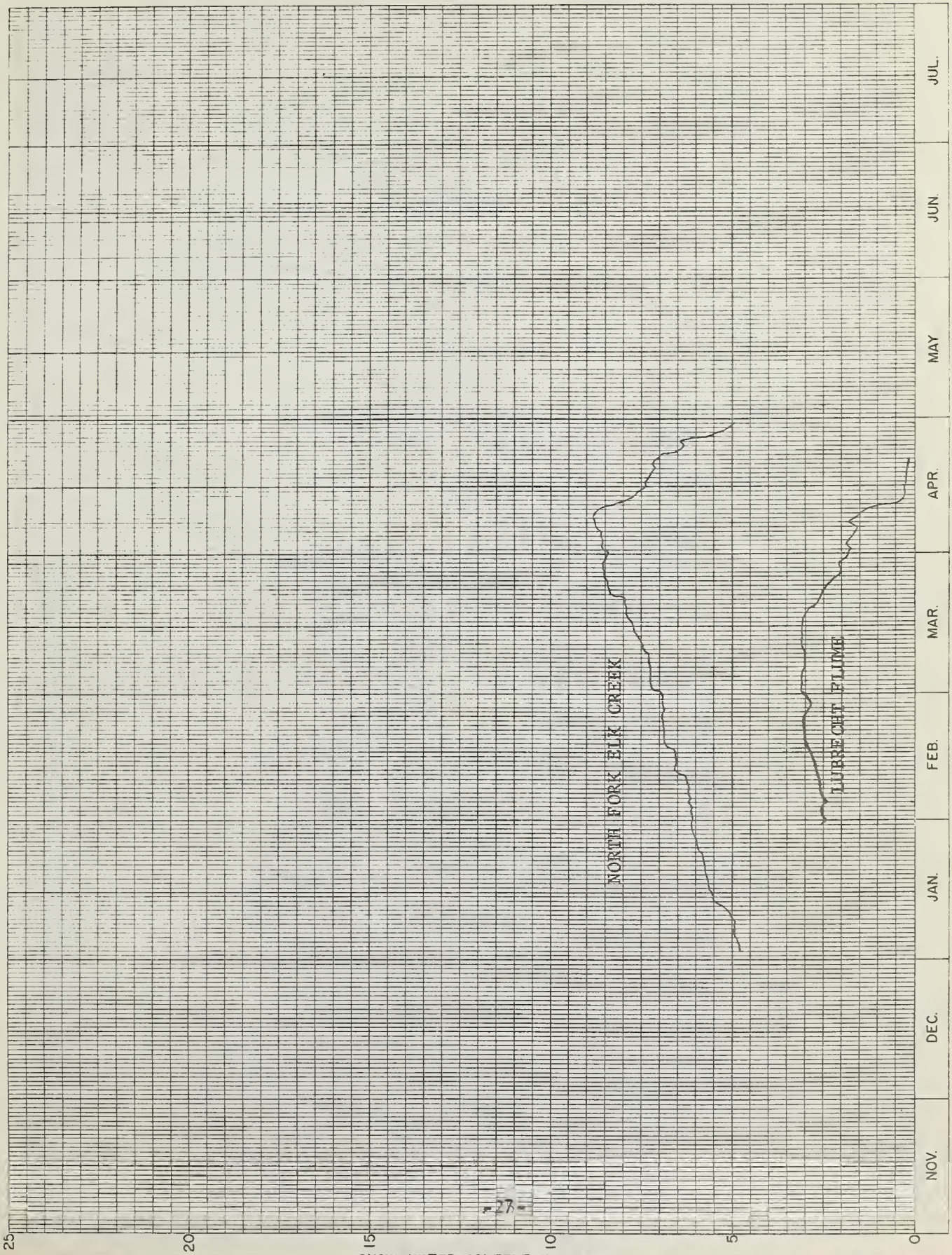
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage. CLARK FORK



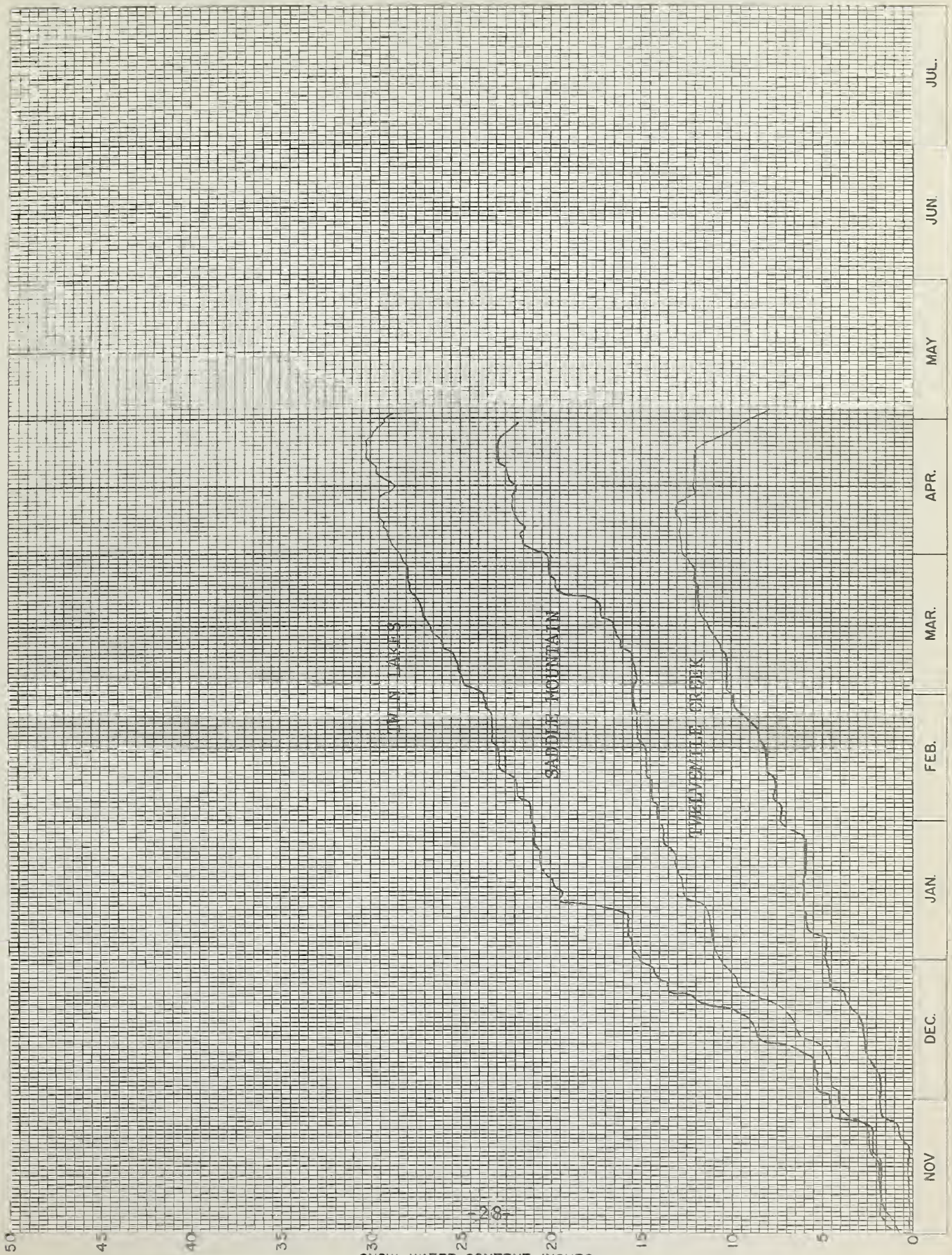
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage. BLACKFOOT



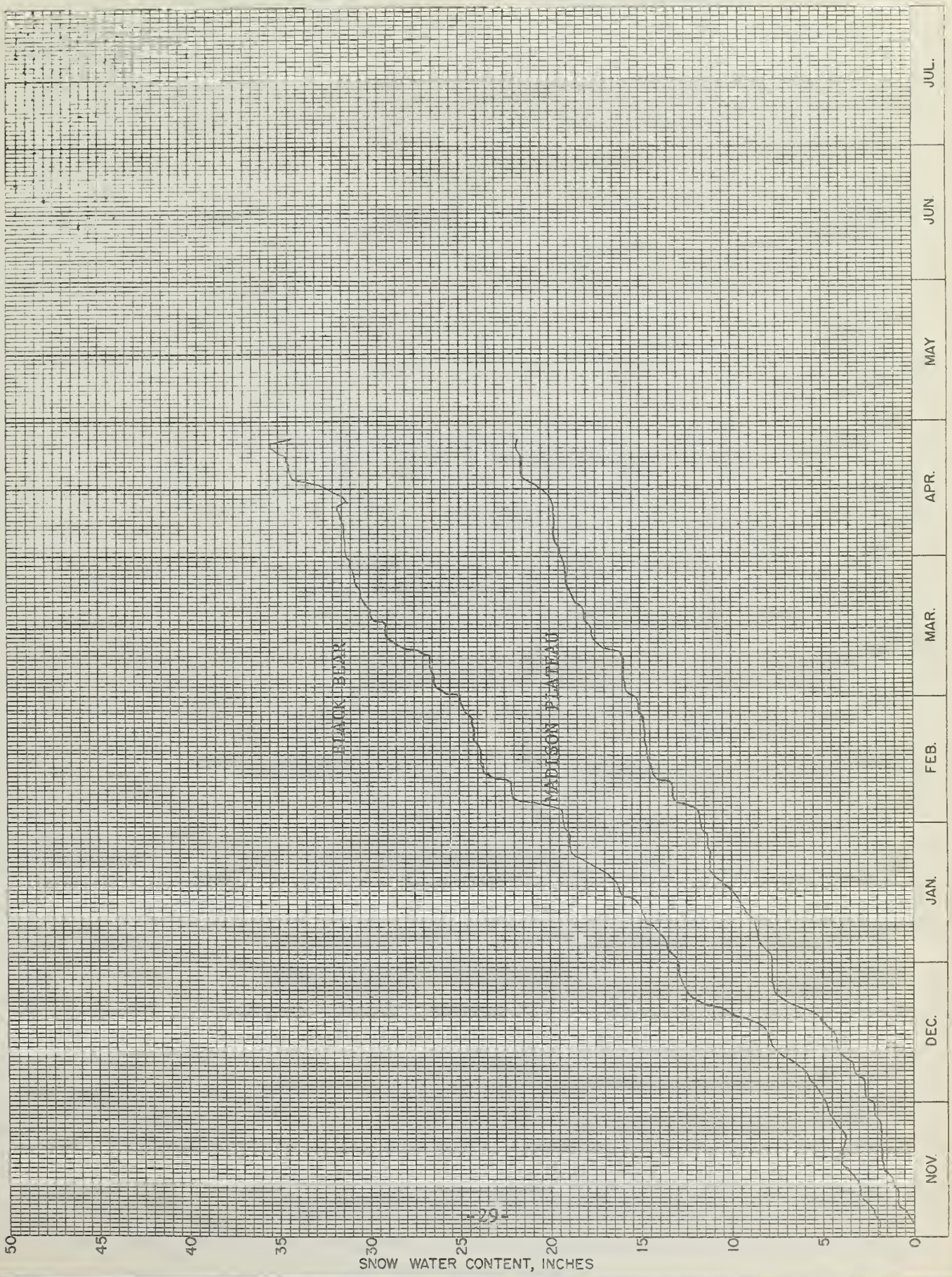
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage: BITTERROOT



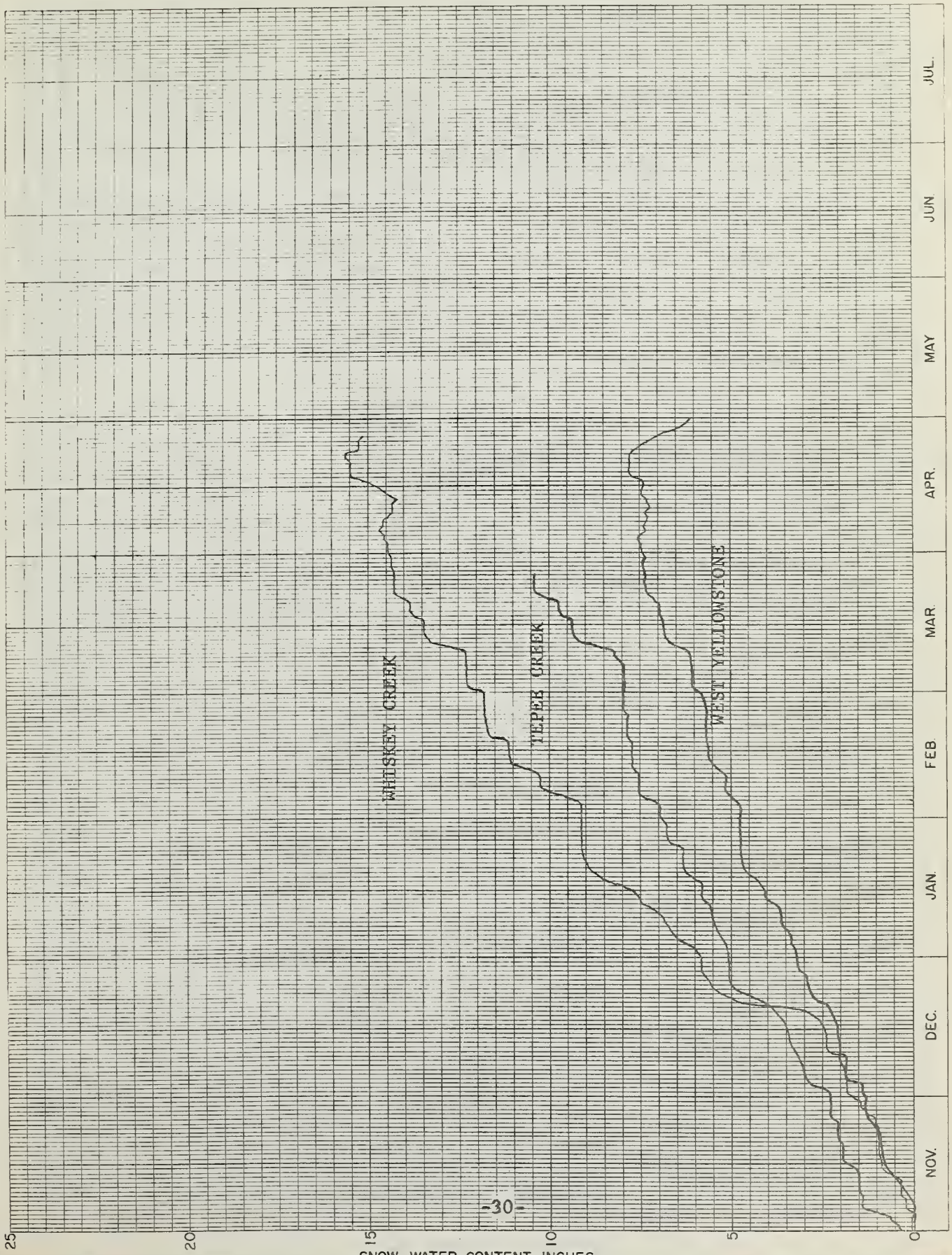
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage: MADISON



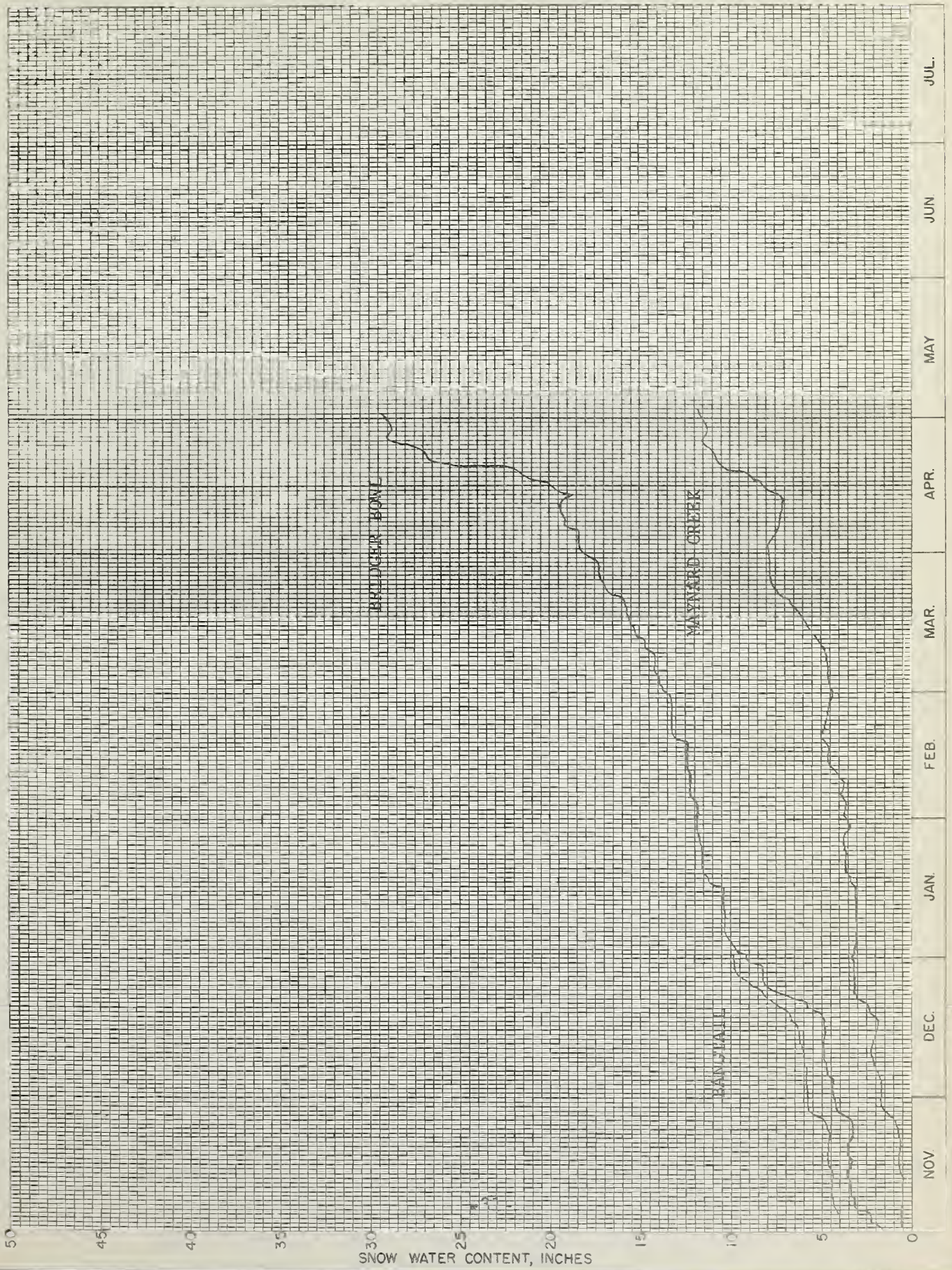
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage. MADISON



SNOW PILLOW DATA
WATER YEAR 1973

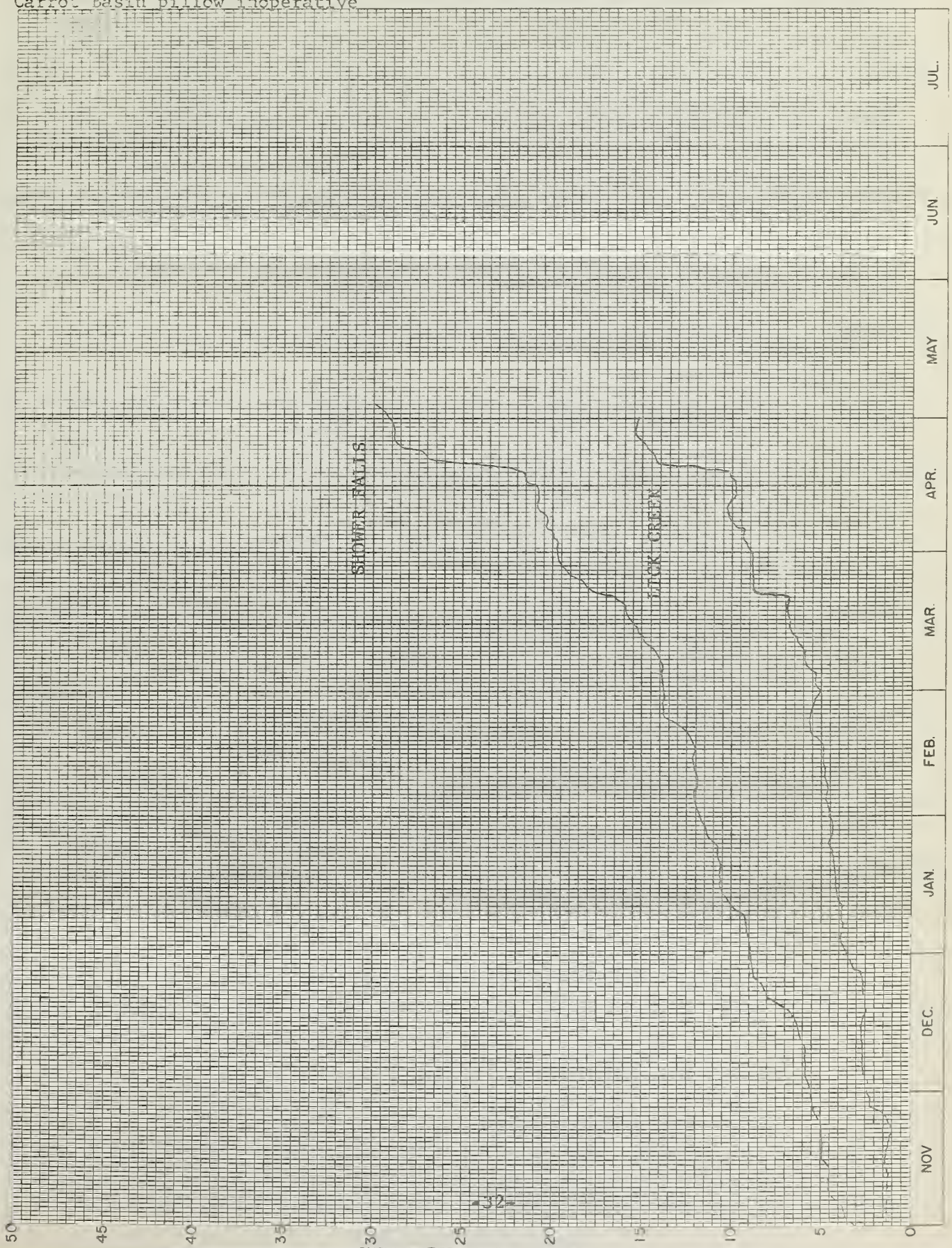
No. _____ Elev. _____ Drainage: GALLATIN



SNOW PILLOW DATA
WATER YEAR 1973

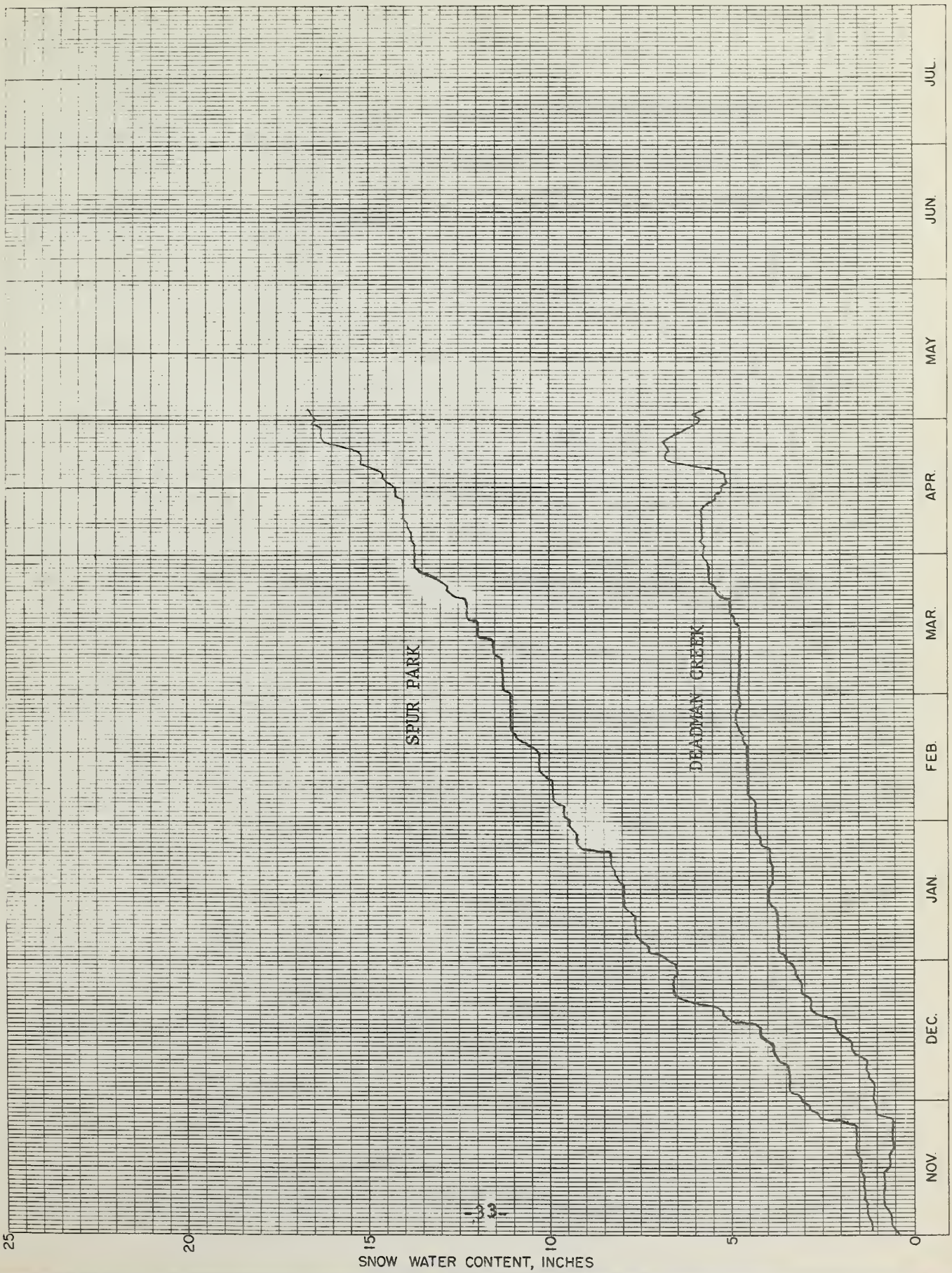
No. _____ Elev. _____ Drainage: GALLATIN

Carrot Basin pillow inoperative



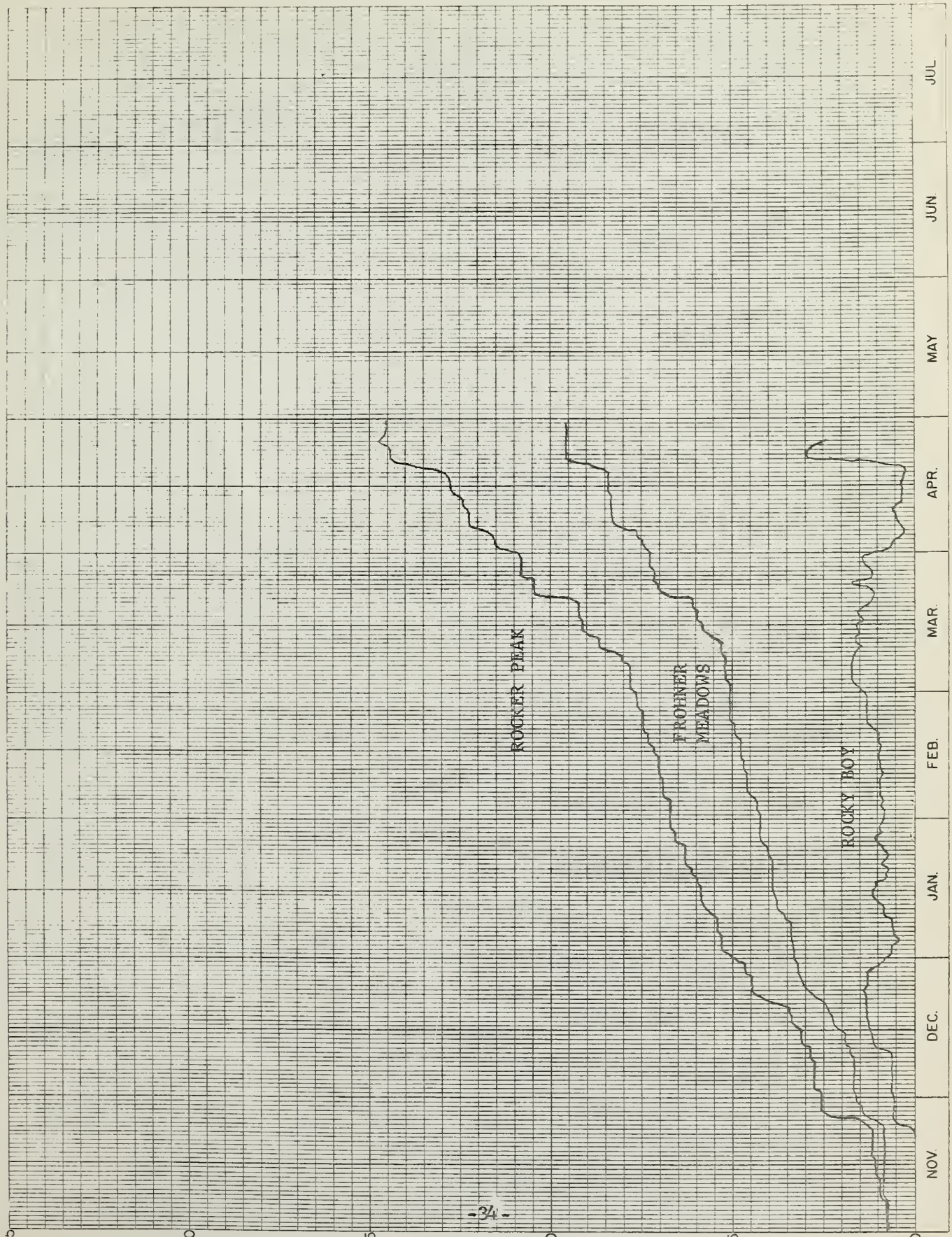
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage. JUDITH-JEFFERSON-MISSOURI



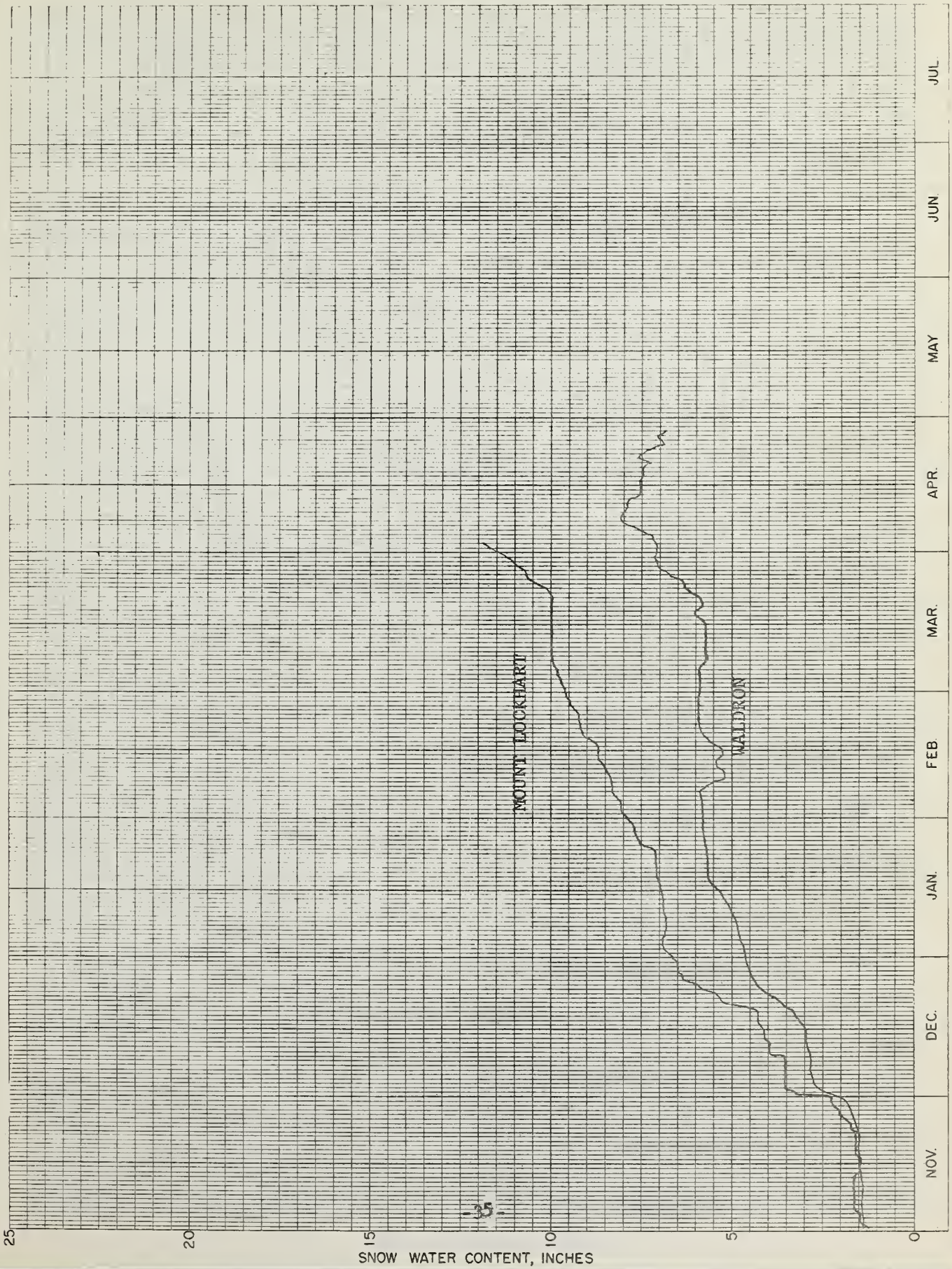
SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage. JEFFERSON-MISSOURI-MILK



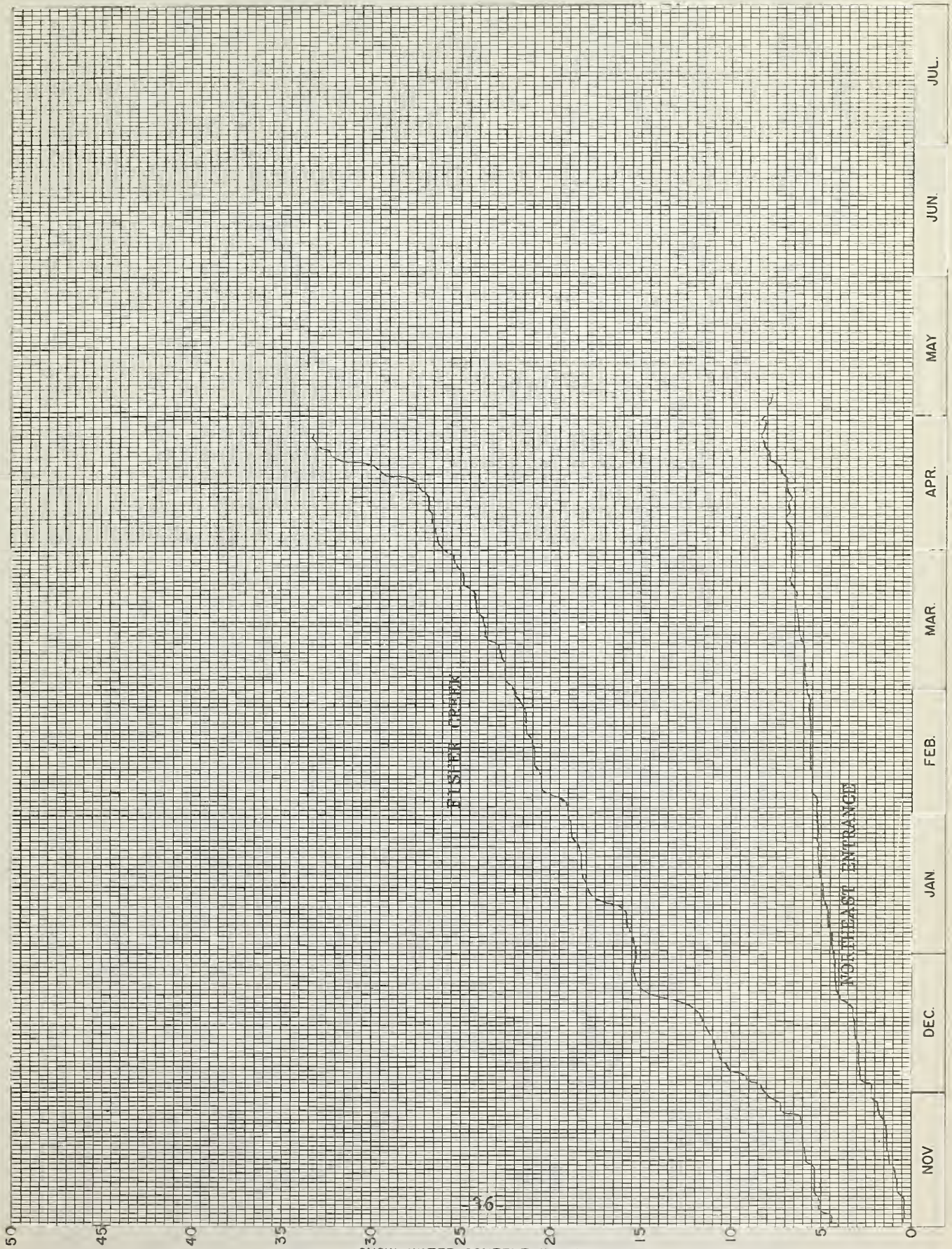
SNOW PILLOW DATA
WATER YEAR 1973

No. Elev. Drainage SUN-TETON

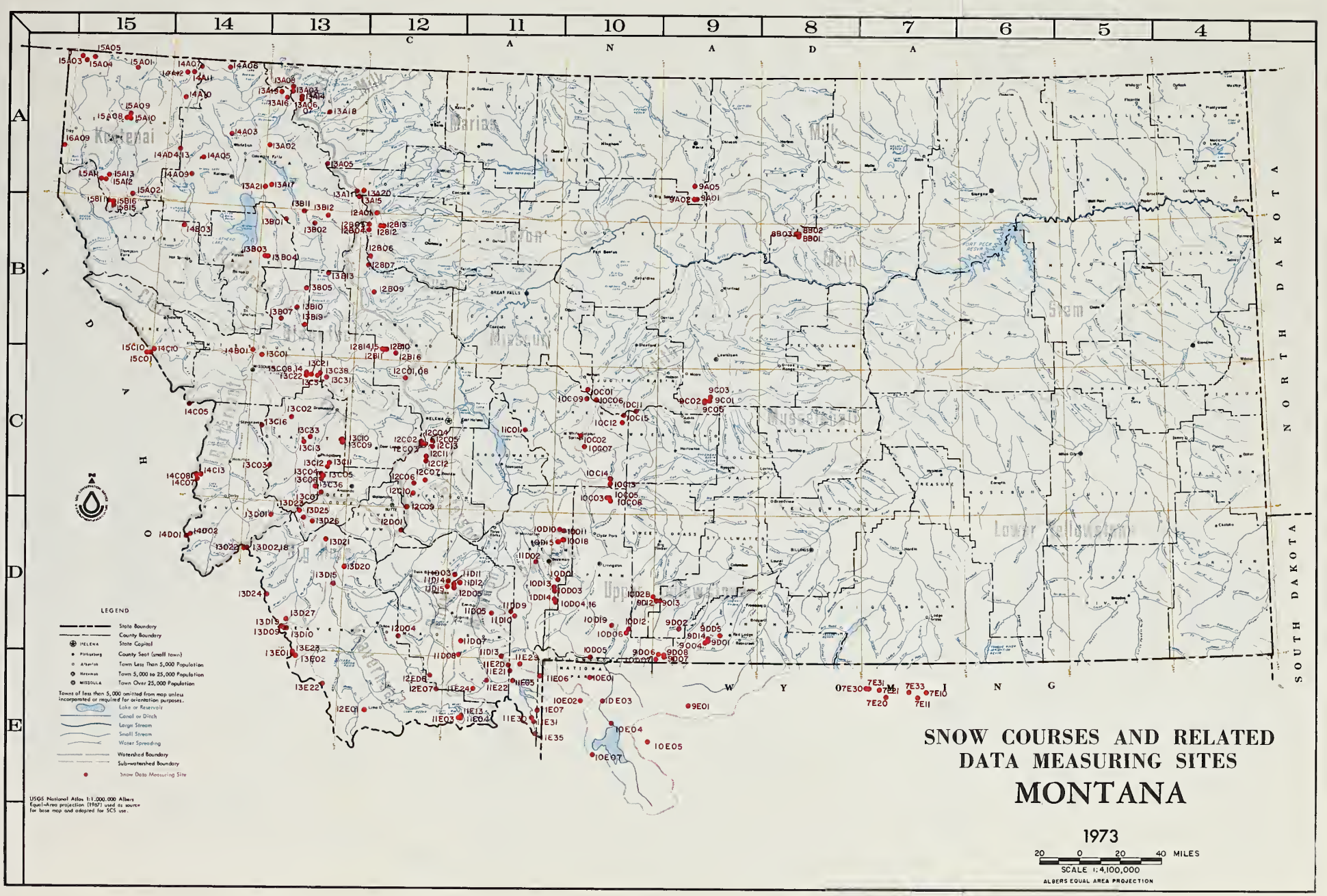


SNOW PILLOW DATA
WATER YEAR 1973

No. _____ Elev. _____ Drainage: YELLOWSTONE



7-P-18764B-J


15 14 13 12 11 10 9 8 7 6 5 4
A B C D E
CANADA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
LEGEND
State Boundary
County Boundary
HELENA State Capital
Philipsburg County Seat (small town)
Alberton Town Less Than 5,000 Population
Bozeman Town 5,000 to 25,000 Population
MISSOULA Town Over 25,000 Population
Towns of less than 5,000 omitted from map unless incorporated or required for orientation purposes.
Lake or Reservoir
Canal or Ditch
Large Stream
Small Stream
Water Spreading
Watershed Boundary
Sub-watershed Boundary
Snow Data Measuring Site
USGS National Atlas 1:1,000,000 Albers Equal-Area projection (1967) used as source for base map and adapted for SCS use.
SNOW COURSES AND RELATED DATA MEASURING SITES
MONTANA
1973
20 0 20 40 MILES
SCALE 1:4,100,000
ALBERS EQUAL AREA PROJECTION

INDEX to MONTANA SNOW COURSES and SOIL MOISTURE STATIONS

SNOW COURSES

COLUMBIA RIVER BASIN

Drainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
KOOTENAI RIVER								
Bald Eagle Peak	15A11	5700	6	27N	31W	1969	3,4,5,5½,6	1
Banfield Mountain	15A08	5600	4	32N	30W	1969	2,3,4,5,5½,6	1
Baree Creek	15B11	5500	36	26N	31W	1956	3,4,5,5½	2
Baree Midway	15B16	4600	31	26N	30W	1966	3,4,5,5½	2
Baree Trail	15B15	3800	5	25N	30W	1965	3,4,5,5½	2
Bristow Creek	15A10	3900	2	32N	30W	1969	2,3,4,5,5½,6	1
Brush Creek	14A04	5000	12	30N	26W	1937	3,4,5	1,2
Brush Creek Timber	14A13	5000	12	30N	26W	1969	3,4,5	1,2
Coder Grove	15A13	4100	35	28N	31W	1969	2,3,4,5,5½,6	1
Davis Creek	15A04	5400	20	37N	33W	1969	2,3,4,5,5½,6	1
Carver Creek	15A05	4250	18	37N	32W	1969	2,3,4,5,5½,6	1
Crowes Creek	14A11	4300	1	36N	25W	1937	3,4,5,5½,6	1
Hawkins Lake	15A03	6450	18	37M	33W	1969	2,3,4,5,5½,6	1
Keeler Creek	16A09	3300	25	30N	35W	1969	3,4,5	1
Lost Soul	15A09	4800	31	33N	29W	1969	2,3,4,5,5½,6	1
Poorman Creek	15A12	5100	5	27N	31W	1969	2,3,4,5,5½,6	1
Red Mountain	15A01	6000	4	36N	29W	1937	3,4,5,5½,6	2
Stehl Peek	14A12	6050	5	36N	25W	1969	3,4,5,5½,6	1
Wessel Divide	14A07	5450	20	37N	24W	1937	3,4,5,5½,6	1
FLATHEAD RIVER								
Bassoo Peak	14B03	5150	11	24N	25W	1961	3,4,5	1,5
Beaver Lake	13A11	5900	31	28N	11W	1964	3,4,5	1
Big Creek	13B03	6750	7	22N	18W	1941	3,4,5, 6	1,5
Camp Misery	13A17	6400	30	28N	18W	1962	3,4,5,6	1,2
Desert Mountain	13A02	5600	24	31M	19W	1937	1,2,3,4,5, 6	1,2
Fatty Creek	13B04	5500	8	22N	18W	1962	3,4,5, 6	1,5
Fletcop Mountain	13A19	6300	12	35M	18W	1968	4	1,6
Griffin Creek Divide	14A09	5150	11	28N	25W	1960	3,4,5	1,5
Gunsight Lake	13B12	6300	30	26N	13W	1964	3,4,5	1
Hell Roaring Divide	14A03	5770	35	32M	22W	1942	1,2,3,4,5,5½,6	2
Holbrook	13B13	4530	18	21N	13W	1951	1,2,3,4,5	1
Kishenehn	14A06	3890	14	37N	22W	1956	3,4	6
Logan Creek	14A05	4300	34	30N	24W	1937	3,4,5	1,2
Marles Pass	13A05	5250	34	30N	14W	1934	1,2,3,4,5	3
Mineral Creek	13A16	4000	29	35N	17W	1957	3,4,5	6
Moisy Creek	13A21	3600	35	28N	19W	1970	3,4,5	1,2
North Fork Jocko	13B07	6330	3	17N	17W	1941	3,4,5,5½,6	1,5
Spotted Bear Mountain	13B02	7000	23	25N	15W	1948	1,2,3,4,5	1
Tynkus Lake	13B01	6100	9	25N	17W	1948	3,4,5	1
Twin Creeks	13B11	3580	25	26N	16W	1951	1,2,3,4,5	1
Upper Holland Lake	13B05	6200	28	20N	15W	1948	3,4,5	1
CLARK FORK RIVER								
Black Pine	13C13	7100	26	8M	15W	1959	1,2,3,4,5,5½,6	1
Combination	13C33	5600	7	8½	14W	1971	1,2,3,4,5	1
Copper Bottom	12B16	5200	15	15M	8W	1971	3,4,5	1,2
Copper Camp	12B14	6950	3	15N	9W	1971	3,4,5	1,2
Copper Creek	12B10	5700	1	15N	9W	1962	3,4,5	1,2
Copper Lake Creek	12B15	6100	3	15N	9W	1971	3,4,5	1,2
Cotter Mine	12B11	6250	2	15N	9W	1962	3,4,5	1,2
Coyote Hill	13B10	4200	12	18N	16W	1947	1,2,3,4,5	1,2
El Dorado Mine	13D07	7800	23	8N	12W	1949	3,4	1
Fred Burr Pass	13C11	8000	12	6N	13W	1957	3,4,5	1
Cold Creek Lake	13C10	7200	14	8N	12W	1949	3,4	1
Heart Lake Trail	14C10	4800	11	14N	27W	1965	1,2,3,4,5,5½,6	1,2
Hoodoo Basin	15C10	6000	17	14N	27W	1967	1,2,3,4,5,5½,6	1,2
Hoodoo Creek	15D01	5900	16	14N	27W	1937	1,2,3,4,5,5½,6	1,2
Intergaerd	13C04	6450	6	5N	13W	1936	2,3,4,5	4
Lubrecht Flume	13C38	4800	13	13N	14W	1971	1,2,3,4,5	8
Lubrecht Forest No, 3	13C21	5450	19	13N	14W	1951	1,2,3,4,5	8
Lubrecht Forest No, 4	13C22	4650	23	13N	15W	1951	1,2,3,4,5	8
Lubrecht Forest No. 6	13C08	4040	11	13N	15W	1951	1,2,3,4,5	8
Lubrecht Hydroplot	13C37	4200	22	13N	14W	1971	1,2,3,4,5	8
North Fork Elk Creek	13C31	6250	20	13N	13W	1968	1,2,3,4,5,5½,6	8
Peterson Meadows	13C36	7200	2	4N	14W	1971	1,2,3,4,5	2
Red Lion	13C12	7100	22	6N	13W	1958	3,4,5	1
Skalkaho Summit	13D03	7260	30	6N	17W	1937	3,4,5,5½,6	1
Slide Rock Mountain	13C02	7100	35	10N	16W	1937	3,4,5	1
Southern Cross	13D05	6500	8	5N	13W	1936	2,3,4	4
Storm Lake	13D07	7780	19	4N	13W	1939	1,2,3,4,5	1
Stuart Mill	13C06	6500	19	5N	13W	1936	2,3,4	4
Stuart Mountain	13D01	7400	6	14N	18W	1936	3,4,5,5½,6	8
TV Mountain	14B01	6800	33	15N	19W	1956	1,2,3,4,5,5½,6	8
BITTERROOT RIVER								
Ambrose	13C16	6480	28	9M	18W	1960	3,4,5	1
East Fork R. S.	13D01	5400	16	2N	17W	1937	3,4	1
Gibbons Pass	13D02	7100	4	2S	19W	1934	1,2,3,4,5,5½,6	1,3
Lost Horse	14D07	5940	5	4N	23W	1950	3,4,5,5½,6	1
Nez Perce Camp	14D02	5580	19	1S	23W	1937	3,4,5	1
Nez Perce Pass	14D01	6570	25	1S	24W	1937	3,4,5	1
Saddle Mountain	13D22	7940	5	2S	19W	1965	1,2,3,4,5,5½,6	1
Twelvemile Creek	14C13	5600	34	5N	23W	1968	1,2,3,4,5,5½,6	1
Twin Lakes	14C08	6510	32	5M	23W	1960	1,2,3,4,5,5½,6	1

HUDSON BAY BASIN

Drainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
ST. MARY RIVER								
Hudson Bay Divide	13A18	5800	24	34N	14W	1962	3,4,5	3
Iceberg Lake No, 3	13A03	5600	1	35M	17W	1922	5	3,9
Josephine Lower No. 9	13A14	4900	22	35N	16W	1955	5	3,9
Mount Allen No, 7	13A07	5700	27	35N	16W	1922	5	3,9
Piegan Pass No. 6	13A06	5500	27	35N	16W	1922	5	3,9
Ptarmigan No. 8	13A08	5800	36	36N	17W	1937	5	3,9

MISSOURI RIVER BASIN

Drainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
BEAVERHEAD RIVER								
Bloody Dick	13D10	7600	12	8S	16W	1948	3,4,5	1
Carter Creek	12D04	7400	22	8S	7W	1963	2,3,4	11
Dad Creek Lake	13E22	8400	24	12S	13W	1965	3,4,5	1
Elk Horn Springs	13D15	7800	21	4S	12W	1935	3,4,5	3
Gold Stone	13D09	8100	11	8S	16W	1948	3,4,5	1
Lakeview Canyon	11E04	6930	26	14S	2W	1948	1,2,3,4,5	10
Lakeview Ridge	11E03	7400	27	14S	2W	1948	1,2,3,4,5	10
Lemhi Pass	13E01	7480	9	10S	15W	1948	3,4	1
Lemhi Ridge	13E23	8100	4	10S	15W	1967	3,4	1
Trail Creek	13E02	7090	15	10S	15W	1948	3,4	1
White Pine Ridge	12E01	8850	18	14S	9W	1948	3,4,5	1
RUBY RIVER								
Brenham Lakes	11D14	8850	5	4S	3W	1967	3,4,5	1,12
Clover Meadow	11D08	8600	28	9S	2W	1963	3,4,5	1
Divide	12E07	7900	14	12S	4W	1963	3,4,5	1
Middle Mill Creek	11D15	7850	17	4S	3W	1967	3,4,5	1,12
Notch	12E06	8500	18	11S	4W	1963	3,4,5	1
Smuggler Mine	12D05	6960	24	4S	4W	1967	3,4,5	1,12
BIG HOLE RIVER								
Abundance Lake	13D20	8800	7	3S	11W	1963	3,4,5	1
Calvert Creek	13D26	6450	34	2M	14W	1969	3,4,5	1
Darkhorse Lake	13D19	8600	4	8S	16W	1963	3,4,5	1
Foolhen	13D21	8280	11	1S	13W	1963	3,4,5	1
Johnke Lake Trail	13D27	7200	24	7S	16W	1969	3,4,5	1
Mudd Lake	13D25	7650	26	2N	15W	1969	3,4,5	1
Palisade Creak	13D23	8250	3	2N	15W	1967	4,5	1
Slag-A-Melt Lake	13D24	8750	29	5S	17W	1968	3,4,5	1
JEFFERSON RIVER								
Berry Meadow	12C07	7300	8	5N	5W	1962	3,4	1
Copper Mountain	12D09	7700	13	3M	7W	1966	2,3,4,5,5½	4
Mex Perce Creek	12C10	6500	16	4N	6W	1967	2,3,4,5	4
Picnic Grounde	12C06	6500	21	5N	6W	1941	2,3,4	4
Pipestone Pass	12D01	7200	10	1N	7W	1938	1,2,3,4,5	1
Rocker Peak	12C11	8000	17	7N	5W	1968	1,2,3,4,5	1
Uncle Sam Gulch	12C12	6500	32	7N	5W	1968	3,4,5	1
MADISON RIVER								
Black Bear	11E35	7950	27	15S	5E	1972	1,2,3,4,5,5½,6	1,2
Call Road	11D07	8050	21	8S	2W	1962	3,4,5	1
Four Mile	11D12	6900	5	4S	2W	1965	3,4,5	1
Hebgen Dam	11E05	6550	22	11S	3E	1934	1,2,3,4,5	3
Jack Creek	11D05	7500	13	6S	1E	1961	3,4	1
Lake Creek	11E22	6100	27	11S	1E	1965	2,3,4,5	2
Lower Twin	11D11	7900	12	4S	3W	1965	3,4,5	1
Madison Plateau	11E31	7750	28	14S	5E	1968	1,2,3,4,5,5½,6	1,2
North Meadow	11D03	7500	24	3S	3W	1961	3,4,5	1
Potomageton Park	11E21	7150	33	10S	3E	1965	3,4,5	2
Sentinel Creek	11E20	8300	17	10S	3E	1965	3,4,5	2
Tepee Creek	11E24	8000	15	12S	1W	1965	2,3,4,5	2
West Yellowstone	11E07	6700	34	13S	5E	1934	1,2,3,4,5	1,3,6
Whiskey Creek	11E30	6800	19	14S	5E	1967	1,2,3,4,5,5½,6	2
GALLATIN RIVER								
Arch Falls	10D14	7350	3	5S	6E	1963	1,2,3,4,5,5½,6	1
Bear Basin	11D09	8150	9	6S	3E	1963	3,4,5	1
Bridger Bowl	10D15	7250	25	1M	6E	1965	1,2,3,4,5,5½,6	1
Corrot Basin	11E29	9000	18	10S	4E	1967	1,2,3,4,5	2
Devils Slide	10D04	8100	14	5S	6E	1935	1,2,3,4,5,5½,6	1
Hood Meadow	10D03	6600	22	4S	6E	1935	1,2,3,4,5,5½,6	1
Lick Creek	10D13	6850	10	4S	6E	1964	1,2,3,4,5,5½,6	1
Little Park	11D10	7600	22	6S	3E	1963	3,4,5	1
Maynard Creek	10D18	6210	19	1N	7E	1967	1,2,3,4,5,5½,6	1
New World	10D01	6700	24	3S	6E	1939	2,3,4	1
Shower Falls	10D16	8100	14	5S	6E	1966	1,2,3,4,5,5½,6	1
Taylor Peeks	11D13	8500	26	9S	2E	1967	3,4,5	1
Twenty-One Mile	11E06	7150	1	11S	5E	1934	1,2,3,4,5	3
MISSOURI RIVER MAIN STEM								
Boulder Mountain	11C01	7950	1	9N	3E	1963	3,4,5	1
Chessman Reservoir	12D05	6200	2	8M	5W	1936	1,2,3,4,5	3
Deadman Creek	10C09	6450	23	12N	8E	1966	1,2,3,4,5,5½,6	1
Elk Peak	10C07	8000	10	8N	8E	1963	3,4,5	1
Frohner Meadows	12C13	6500	23	8M	5W	1971	1,2,3,4,5	1
Grasshopper	10D02	7000	19	9N	8E	1938	3,4,5	1
Kings Hill	10C01	7500	34	13N	8E	1934	3,4,5,5½,6	1,3
Stemple Pass	12C01	6600	16	13N	7W	1934	3,4,5	3
Ten Mile Lower	12C02	6600	12	8N	6W	1935	1,2,3,4,5	3
Ten Mile Middle	12C03	6800	13	8N	6W	1934	1,2,3,4,5	3
Ten Mile Upper	12C04	8000	19	8N	5W	1935	1,2,3,4,5	3
SUN-TETON-MARIAS RIVERS								
Badger Pess	13A15	6900	4	27N	11W	1964	1,2,3,4,5	1
Blue Lake	13A20	5900	25	28N	11W	1969	1,2,3,4,5	1
Cabin Creek	12B06	5200	33	23N	10W	1949	3,4,5	2
Piva-Bull	12B09	5700	25	20N	10W	1948	3,4,5	1
Freight Creek	12A01	6000	13	26N	10W	1948	3,4,5	1
Goat Mountain	12B07	7000	20	22N	10W	1934	3,4,5	3
Mount Lockhart	12B12	6400	18	25N	9W	1969	1,2,3,4,5,5½,6	2
Waldron	12B13	5600	17	25N	9W	1969	1,2,3,4,5,5½,6	2
Wrong Creek	12B04	5700	32	25N	10W	1949	3,4,5	2
Wrong Ridge	12B03	6800	17	25N	10W	1949	3,4,5	2
JUDITH RIVER								
Avalenche	9C02	7100	24	12N	17E	1966	3,4,5	1
Big Snowy	9C05	7150	25	12N	17E	1971	3,4,5	1
Crystal Lake	9C01	6100	19	12N	18E	1941	3,4,5	1
Rock Creek	9C03	5600	8	12N	18E	1966	3,4,5	1
Spur Park	10D06	8100	20	12N	9E	1963	1,2,3,4,5,5½,6	1

Drainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
MUSSELSHELL RIVER								
Daisy Peak	10C15	7600	34	11N	11E	1969	3,4,5	2
Eagle Creek	10C13	7000	2	5N	10E	1969	3,4,5	2
Forest Lake	10C14	6400	26	6N	10E	1969	3,4,5	2
Moymaker	10C11	8050	16	11N	12E	1969	3,4,5	2
Johnson Park	10C12	6450	16	10N	11E	1969	3,4,5	2
MILK RIVER								
Bear Paw Ski Area	9A02	5200	21	28N	16E	1967	1,2,3,4,5	1,7
King Creek Saddle	8B02	4550	10	25N	24E	1971	1,2,3,4,5	5
King Springs	8B03	4150	9	25N	24E	1971	1,2,3,4,5	5
Mission Mountain	8B01	5050	15	25N	24E	1971	1,2,3,4,5	5
Rocky Boy	9A01	4700	22	28N	16E	1941	1,2,3,4,5	1,7
UPPER YELLOWSTONE RIVER								
Bald Ridge	10C05	7500	11	4N	10E	1961	3,4,5	1
Bat Sota	9D14	7750	35	7S	18E	1973	3,4,5	1
Camp Sanie	9D01	7890	2	8S	18E	1937	3,4,5,5½,6	1
Cooke Station	9D07	8150	19	9S	15E	1966	3,4,5,5½,6	1,2
Crevice Mountain	10D05	8400	22	9S	9E	1935	3,4	2
Fisher Creek	9D06	9100	11	9S	14E	1966	3,4,5,5½,6	1,2
Grizzly Peak	9D05	8400	26	7S	19E	1961	1,2,3,4,5	1,2
Independence	10D06	7850	21	7S	12E	1940	3,4,5	1
Mill Creek	10D19	7500	6	7S	11E	1967	3,4,5	2
Monument Peak	10D12	8800	16	7S	12E	1961	3,4,5	1
Northeast Entrance	10D07	7400	33	9S	14E	1937	1,2,3,4,5,5½,6	1,6
Picket Pin Lower	9D13	6200	1	5S	14E	1972	1,2,3,4,5	13
Picket Pin Middle	9D12	7250	3	5S	14E	1972	1,2,3,4,5	13
Picket Pin Upper	10D28	8500	32	4S	14E	1972	1,2,3,4,5	13
Porcupine R. S.	10C03	6500	10	4N	10E	1938	3,4,5	1
Sacajawea	10D10	6550	36	2N	6E	1960	3,4,5	1
South Fork Shields	10C08	8100	13	4N	10E	1965	3,4,5	1
Timberline Creek	9D04	8950	10	8S	18E	1961	3,4,5,5½,6	1
West Rosebud	9D02	7500	9	7S	16E	1960	3,4	4
White Mill	9D08	8700	18	9S	15E	1966	3,4,5,5½,6	1,2

SOIL MOISTURE STATIONS

COLUMBIA RIVER BASIN

Drainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
KOOTENAI RIVER								
Baree Trail	15B15M	3800	5	25N	30W	1964	Monthly	2
Murphy Lake R, S,	16A10M	3000	5	34N	25W	1964	Monthly	2
Raven R, S,	15A02M	3050	2	26N	29W	1964	Monthly	2
FLATHEAD RIVER								
Desert Mountain	13A02M	5600	24	31M	19W	1956	Monthly	1
Moriae Pass	13A05M	5250	34	30N	14W	1950	Monthly	6
CLARK FORK RIVER								
Black Pine	13C13M	7100	26	8N	15W	1965	Monthly	1
Lubrecht Forest	13C14M	4100	11	13N	15W	1961	Monthly	8
Seeley Lake R, S,	13B19M	4030	21	17N	15W	1963	Monthly	2
Skalkaho Summit	13D03M	7260	30	6N	17W	1964	Monthly	1
BITTERROOT RIVER								
Gibbons Pass	13D1BM	7100	4	2S	19W	1962	Monthly	1
Lolo Pass	14D05M	5250	11	10M	24W	1963	Monthly	1

MISSOURI RIVER BASIN

Drainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Meas. By 2/
BEAVERHEAD RIVER								
Lakeview	11E13M	6700	23	14S	2W	1962	Monthly	10
MADISON RIVER								
West Yellowstone	11E07M	6700	34	13S	5E	1966	Monthly	6
GALLATIN RIVER								
Bridger Bowl	10D15M	7250	25	1N	6E	1966	Monthly	1
College Site No, 2	11D02M	4856	18	2S	5E	1956	Monthly	1
Lick Creek	10D13M	6860	10	4S	6E	1965	Monthly	1
Twenty-One Mile	11E06M	7150	1	11S	5E	1963	Monthly	6
MISSOURI RIVER MAIN STEM								
Kings Hill	10C01M	7420	34	13N	8E	1963	Monthly	1
Stemple Pass	12D08M	6350	16	13N	7W	1963	Monthly	1
MILK RIVER								
Beaver Creek	9A05M	3950	21	29N	16E	1969	Monthly	1
Rocky Boy	9A01M	4700	22	28N	16E	1969	Monthly	1
YELLOWSTONE RIVER								
Battle Ridge	10D11M	6020	32	2N	7E	1960	Monthly	1
Northeast Entrence	10D07M	7350	33	9S	14E	1962	Monthly	6

LEGEND

1/ Numerals 1,2,3,4,5,5½,6 refer to January 1, February 1, March 1, April 1, May 1, May 15, and June 1

2/ Numerals refer to Agency making the snow surveys as follows:

1. Soil Conservation Service
2. Forest Service
3. Geological Survey
4. Montana Power Company
5. Bureau of Indian Affairs
6. National Park Service
7. MSU Agriculturel Experiment Station
8. U. of M. School of Forestry
9. Department of Energy, Mines and Resources
10. Bureau of Sports Fisheries and Wildlife
11. Private Cooperator
12. Montana Conservation Districts
13. Montana Department of Fish and Game

Agencies and Organizations Cooperating in Montana Snow Surveys

GOVERNMENT AGENCIES

Canada:

Water Survey of Canada, Calgary, Department of the Environment
Water Resources Service, Department of Lands, Forests and Water Resources, British Columbia

Federal:

Department of the Army
- Corps of Engineers

U.S. Department of Agriculture
- Forest Service
- Soil Conservation Service

U.S. Department of Commerce
- NOAA, National Weather Service

U.S. Department of the Interior
- Bonneville Power Administration
- Bureau of Indian Affairs
- Bureau of Reclamation
- Bureau of Sports Fisheries and Wildlife
- Geological Survey
- National Park Service

STATE

Montana Conservation Districts
Montana Department of Fish and Game
Montana Department of Natural Resources and Conservation
Montana Water Resources Board
Montana State University - Agricultural Experiment Station
North Montana Branch Station - Agricultural Experiment Station
University of Montana - School of Forestry

PRIVATE

Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P.O. BOX 98
BOZEMAN, MONTANA 59715

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WATER SUPPLY OUTLOOK FOR MONTANA

Prepared by

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

MONTANA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

AS OF
MAY. 15, 1973

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 511 N. W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	204 E. 5th. Ave., Room 217, Anchorage, Alaska 99501
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia

COVER PHOTO NUMBER ORC-286-4

USDA-SCS-PORTLAND, OREG 1973

WATER SUPPLY OUTLOOK FOR MONTANA

and

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

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SOIL CONSERVATION SERVICE
P.O. Box 98
Bozeman, Montana 59715

MONTANA WATER SUPPLY OUTLOOK
May 15, 1973

* *
*   *
* Lower elevation snowmelt has progressed since May 1 snow surveys.   *
* Snowmelt began near mid May at the higher elevations. The snowpack   *
* is very deficient west of the divide and on nearly all drainages east *
* of the divide. Exceptions are the Gallatin, Madison, and upper   *
* Yellowstone River drainages where higher elevation snow water   *
* equivalent is near average.   *
*   *
* *

COLUMBIA RIVER DRAINAGE

Snow Cover - All snow courses have below average water equivalents for this date. Melting has begun but melt water absorbed by the dry soils has decreased runoff. Based on snow pillow records, major snowfed streams on the Columbia River drainage are expected to reach their snowmelt peak in late May. Many smaller streams and those with low elevation headwaters have reached their snowmelt peak for this season.

MISSOURI RIVER DRAINAGE

Snow Cover - Snowpack is near average for this date on the Gallatin and Madison drainages, but is below average in all other areas. Melting has begun at higher elevations. Small streams with low elevation headwaters are presently reaching their peak snowmelt for this season. Snow pillow records indicate the snowmelt peak on the Gallatin can be expected in early to mid June, while the Madison and Jefferson should peak in late May.

YELLOWSTONE RIVER DRAINAGE

Snow Cover - Snowpack at the higher elevations of the upper Yellowstone River drainage is generally average, with the exception of along the northeastern face of the Beartooth Mountains where snow cover remains above average and near maximum of record for this date. Snow pillow readings indicate major streams in the Yellowstone drainage should reach their snowmelt peak near the first week in June.

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches) Last Year	Average

COLUMBIA RIVER BASIN

KOOTENAI RIVER

Bald Eagle Peak	5700	5/17	81	41.3	88.1	-
Banfield Mountain	5600	5/16	15	7.4	25.4	-
Banfield Mountain Pillow	5600	5/16	SP	8.0	25.0	-
Baree Creek	5500	5/15	43	22.0	61.2	43.4
Baree Midway	4600	5/15	17	8.0	37.6	26.8
Baree Trail	3800	5/15	0	0.0	0.0	0.0
Bristow Creek	3900	5/16	0	0.0	0.0	-
Cedar Grove	4100	5/17	0	0.0	0.0	-
Davis Creek	5400	5/15	16	8.4	20.1	-
Fernie	3500	5/14	0	0.0	0.0	0.4
Garver Creek	4250	5/15	0	0.0	0.0	-
Garver Creek Pillow	4250	5/15	0	0.0	0.0	-
Glacier	4100	5/14	42	21.0	39.7	22.3
Graves Creek	4300	5/14	2	1.0	17.6	10.5
Gray Creek	5100	5/14	45	17.5	27.0	18.4
Hawkins Lake	6450	5/15	57	27.0	40.1	-
Hawkins Lake Pillow	6450	5/15	SP	25.3	45.0	-
Kicking Horse	5400	5/14	21	8.3	18.4	10.6
Lost Soul	4800	5/16	0	0.0	0.0	-
Marble Canyon	5000	5/15	21	6.2	19.4	8.3
New Fernie	4100	5/14	1	0.4	4.6	2.0
Poorman Creek	5100	5/17	13	6.5	38.1	-
Poorman Creek Pillow	5100	5/17	SP	9.9	42.0	-
Red Mountain	6000	5/15	24	9.9	23.9	18.2
Sinclair Pass	4500	5/14	1	0.4	3.6	1.0
Stahl Peak	6050	5/14	77	39.1	50.8	-
Sullivan Mine	5100	5/14	12	4.8	14.0	7.6
Weasel Divide	5450	5/14	53	27.2	48.6	33.2

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
FLATHEAD RIVER						
Hell Roaring Divide	5770				43.4	27.5
North Fork Jocko	6330	5/15	52	25.2	63.1	46.2
CLARK FORK RIVER						
Black Pine	7100	5/15	13	4.6	-	11.8
Black Pine Pillow	7100	5/15	SP	4.5	22.2	13.4
Heart Lake Trail	4800	5/15	0	0.0	26.2	-
Hoodoo Basin	6000	5/15	61	29.1	83.4	-
Hoodoo Basin Pillow	6000	5/15	SP	26.4	73.9	-
Hoodoo Creek	5900	5/15	59	28.0	79.2	42.5
Lookout	5250	5/15	21	9.2	47.0	28.4
North Fork Elk Creek	6250	5/14	0	0.0	-	-
North Fork Elk Creek Pillow	6250	5/14	0	0.0	13.5	-
Skalkaho Summit	7260	5/15	34	13.8	46.6	25.2
Stuart Mountain	7400	5/14	48	22.0	46.9	27.5
TV Mountain	6800	5/14	22	9.4	29.6	-
BITTERROOT RIVER						
Gibbons Pass	7100	5/16	25	11.2	32.8	19.6
Lost Horse	5940	5/14	42	18.5	56.4	29.0
Saddle Mountain	7940	5/16	46	20.1	41.2	27.6
Saddle Mountain Pillow	7940				41.7	-
Twelvemile Creek	5600	5/14	0	0.0	19.8	-
Twelvemile Creek Pillow	5600	5/14	SP	0.0	11.8	-
Twin Lakes	6510	5/14	57	26.8	68.6	44.0
Twin Lakes Pillow	6400	5/14	SP	24.5	69.2	-

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
MISSOURI RIVER BASIN						
JEFFERSON RIVER						
Copper Mountain	7700	5/15	16	5.6	11.6	-
Rocker Peak	8000	5/14	36	12.8	22.2	-
Rocker Peak Pillow	8000	5/14	SP	15.9	23.5	-
MADISON RIVER						
Tepee Creek	8000	5/16	41	14.1	-	-
Tepee Creek Pillow	8000	5/16	SP	9.7	-	-
West Yellowstone Pillow	6700	5/15	SP	0.0	0.0	-
Whiskey Creek	6800	5/16	0	0.0	11.3	-
Whiskey Creek Pillow	6800	5/16	SP	6.5	11.4	-
GALLATIN RIVER						
Arch Falls	7350	5/14	44	16.8	11.8	13.4
Bridger Bowl	7250	5/15	65	27.0	32.8	27.6
Bridger Bowl Pillow	7250	5/15	SP	26.6	32.1	25.1
Devils Slide	8100	5/14	71	26.6	25.8	26.0
Hood Meadow	6600	5/14	37	13.6	3.8	7.3
Lick Creek	6860	5/14	37	13.2	0.0	7.3
Lick Creek Pillow	6860	5/14	SP	11.0	0.2	6.5
Maynard Creek	6210	5/15	38	15.6	18.0	13.4
Maynard Creek Pillow	6210	5/15	SP	9.8	10.6	-
Shower Falls	8100	5/14	74	28.5	29.8	28.5
Shower Falls Pillow	8100	5/14	SP	28.6	30.0	27.1
MISSOURI RIVER (Main Stem)						
Deadman Creek	6450	5/14	0	0.0	4.2	7.1
Deadman Creek Pillow	6450	5/14	SP	0.0	2.6	-
Kings Hill	7500	5/14	37	12.5	23.2	14.5
JUDITH RIVER						
Spur Park	8100	5/14	42	14.4	36.2	24.0
Spur Park Pillow	8100	5/14	SP	16.5	35.0	-

Average based on 1953-67 period. SP - Snow pillow observation - water content only.

SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
					Water Content (inches)	
NAME	Elevation	Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Last Year	Average
UPPER YELLOWSTONE RIVER						
Bots Sots	8000	5/16	40	15.0	-	-
Camp Senia	7890	5/16	44	16.8	9.2	8.4
Cooke Station	8150	5/15	41	14.6	24.4	17.8
East Boulder (S)	9250	5/14	77	29.0A	35.0A	-
Fisher Creek	9100	5/15	88	37.1	53.6	36.0
Fisher Creek Pillow	9100	5/15	SP	31.7	53.7	-
Grizzly Peak	8400	5/15	94	35.0	27.8	-
Northeast Entrance	7400	5/15	9	2.8	2.0	4.2
Northeast Entrance Pillow	7350	5/15	SP	3.2	0.4	-
Picket Pin (T)	9450	5/14	73	28.0A	21.0A	-
Picket Pin Lower	6200	5/15	0	0.0	-	-
Picket Pin Middle	7250	5/15	29	11.5	-	-
Picket Pin Upper	8100	5/15	73	28.0	35.9	-
Placer Basin (F)	8800	5/14	72	27.0A	22.5A	-
Star Lake (M)	9670	5/14	78	33.0A	53.0A	-
Timberline Creek	8850	5/16	68	24.6	19.7	17.8
White Mill	8700	5/15	65	25.4	39.8	26.1

Average based on 1953-67 period. SP - Snow pillow observation - water content only.
A - Aerial observation - water content estimated.

Agencies and Organizations Cooperating in Montana Snow Surveys

GOVERNMENT AGENCIES

Canada:

Water Survey of Canada, Calgary, Department of the Environment
Water Resources Service, Department of Lands, Forests and Water Resources, British Columbia

Federal:

Department of the Army
- Corps of Engineers

U.S. Department of Agriculture
- Forest Service
- Soil Conservation Service

U.S. Department of Commerce
- NOAA, National Weather Service

U.S. Department of the Interior
- Bonneville Power Administration
- Bureau of Indian Affairs
- Bureau of Reclamation
- Bureau of Sports Fisheries and Wildlife
- Geological Survey
- National Park Service

STATE

Montana Conservation Districts
Montana Department of Fish and Game
Montana Department of Natural Resources and Conservation
Montana Water Resources Board
Montana State University - Agricultural Experiment Station
North Montana Branch Station - Agricultural Experiment Station
University of Montana - School of Forestry

PRIVATE

Montana Power Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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"The Conservation of Water begins with the Snow Survey"